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NERC/RTP RESEARCH PROJECTS-FISCAL YEAR 1973 (SUMMARIES OF INTRAMURAL AND EXTRAMURAL ACTIVE RESEARCH PROJECTS)

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Office of Research and Monitoring
National Environmental Research Center
U.S. Environmental Protection Agency
Research Triangle Park, N.C. 27711

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NERC/RTP RESEARCH PROJECTS – FISCAL YEAR 1973

SUMMARIES OF INTRAMURAL AND EXTRAMURAL ACTIVE RESEARCH PROJECTS

Office of the Director
National Environmental Research Center
Research Triangle Park, North Carolina

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NATIONAL ENVIRONMENTAL RESEARCH CENTER
OFFICE OF RESEARCH AND MONITORING
U.S. ENVIRONMENTAL PROTECTION AGENCY
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The report has been prepared to provide information on the research conducted by the National Environmental Research Center to the environmental community. The NERC/RTP conducts research, development, and measurement programs to provide the Environmental Protection Agency with rationales and resources to establish controls based upon the need to minimize existing or potential adverse environmental effects on human health. In the overall program, emphasis is placed on three major activities: 1) measurement of human exposure including sources, transport, and distribution; 2) effects of human exposure encompassing health and socioeconomic effects; and 3) least-cost controls of technology. The effects research program covers the following categories: gaseous pollutants, particulate matter, odors, ionizing radiation, electromagnetic radiation, pesticides, toxic substances, and noise. This document therefore presents brief descriptions of approximately 510 research projects pursued by the following NERC components: Division of Health Effects Research, Division of Control Systems, Division of Chemistry and Physics, Division of Meteorology, Division of Atmospheric Surveillance, Office of Criteria Development, Division of Ecological Research, Perrine Primate Laboratory, Twinbrook Research Laboratory, Eastern Environmental Radiation Laboratory.

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FOREWORD

The National Environmental Research Center situated in Research Triangle Park, North Carolina, conducts research, development, and measurement programs to provide the Environmental Protection Agency with rationales and resources to establish controls based upon the need to minimize existing or potential adverse environmental effects on human health. In the overall program, emphasis is placed on three major activities: (1) measurement of human exposure including sources, transport, and distribution; (2) effects of human exposure encompassing health and socioeconomic effects; and (3) least-cost controls of technology including prototype development and predictive modeling. Both short- and long-term activities are pursued in the program. The effects research program covers the following categories: gaseous pollutants, particulate matter, odors, ionizing radiation, electromagnetic radiation, pesticides, toxic substances, and noise.

NERC/RTP provides a center of excellence within the Office of Research and Monitoring for technical assistance and support to other EPA organizations in the areas of air pollution and pesticides, including health effects, social and economic effects, surveillance, measurement development, expert witnesses, technical backup to enforcement, quality control, and research in the atmospheric transformation and transport of pollutants.

This document has been prepared to provide information on the research conducted by NERC/RTP in an effort to inform the environmental community of the mission of the National Environmental Research Center in Research Triangle Park, North Carolina.

John F. Finklea

John F. Finklea, M.D., Director
National Environmental Research Center
Research Triangle Park, North Carolina

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DIVISION OF HEALTH EFFECTS RESEARCH

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:
Biological Effects of Trace Substances and Tobacco Smoke in Interactions with Nitrogen Oxides

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NAME AND ADDRESS OF INSTITUTION:
Stanford Research Institute
Menlo Park, California 94025

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Under previous contract a research model was developed for studies of biological effects of NO_x exposure. The present work represents an extension of this effort. At present funding levels exposure schedules are simple and measurements of effects based on gross observations. As support is increased in the number of parameters is to be increased and the sophistication of measuring effects id improved.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL
(medical, graduate, etc.)

(A)
(B) $50,000
(C)
(D) 21 AFU - 11

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: Interactions of Various Pollutants on the Causation of Pulmonary Disease

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NAME AND ADDRESS OF INSTITUTION:
IIT Research Institute Chicago, Illinois 60616
10 West 35 Street

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of the extension of this contract is twofold: (1) to pursue the effect of NO_2 exposure on the immune systems and to explore the relative weight of peaks versus steady dose in effect of NO_2 and (2) to pursue the effect of trace metals singly and in interaction with NO_2 to determine whether there is synergisms.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

(A)
(B) $148,000
(C)
(D) 21 AFU - 12

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS Qualitation of Population at Risk and Health Costs

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

W. Nelson, Leader

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The main purpose of these studies are to provide urgently needed inputs to cost-benefit appraisals of air pollution control options qualitating the health cost to the American public of the major air pollutants. Dose-response analysis of the current CHESS health indicator data will qualitate health cost of major air pollutants on these new health categories. National estimates can be determined from these same health categories. More complete consideration of mortality, morbidity, subclinical illness categories is urgently needed. Pollution monitoring data and population at risk estimates from various levels of major air pollutants is imperative. At present work is underway on the health costs of acute and chronic respiratory disease as affected by SO_x.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A)
(B) $24,600
(C)
(D) 21 AFW - 10

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS Chronic Respiratory Disease Reports

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

C. Hayes, Leader
J. Baston
J. Bumgarner
D. House
W. Steen

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Chronic respiratory disease symptoms have been linked to ambient air pollution in many epidemiologic studies. These studies are designed to further qualitate these dose-response relationships over an exposed dose gradient. The results of CHESS investigations of dose-response relationships between frequency of chronic respiratory disease symptoms and ambient air pollutant levels of oxides of nitrogen (NO_x), oxides of sulfur (SO_x), photochemical oxidants (O_x), total suspended particulates (TSP), and respirable suspended particulates (RSP) are given in CHESS published reports.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

(A)
(B) $147,500
(C)
(D) 21 AFW - 11

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS Reports or Retrospective Studies of Lower Respiratory Disorder

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

G. Lowrimore, Leader

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Acute lower respiratory diseases have been linked to ambient air pollution in many epidemiologic studies. These studies are designed to qualitate relationship of acute lower respiratory disease frequency to oxides of nitrogen (NO_x), oxides of sulfur (SO_x), photochemical oxidants (O_x), total suspended particulates (TSP), and respirable suspended particulates (RSP) over exposure dose gradients. Technical reports elucidating the dose-response relationship between air pollutants and acute lower respiratory disease frequency will provide necessary health support for the of new air quality control in the revision of existing air quality standards.

METHOD OF SUPPORT (CHECK ONE)

_X_ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

(A)
(B) $147,500
(C)
(D) 21 AFW - 12

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

S.I.E. NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS Reports on Prospective Studies of Acute Respiratory Disorder

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

G. Lowrimore, Leader

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The incidence of acute respiratory disease has been linked to ambient air pollution in many epidemiologic studies. Further qualification of these dose-response relationships is needed. These studies are designed to qualitate the relationship between the incidence of acute respiratory disease, ambient air pollutant levels of nitrogen oxides (NO_x), sulfur oxides, (SO_x), photochemical oxidants (O_x), total suspended particulates (TSP), respirable suspended particulates (RSP). Technical reports elucidating the dose-response relationship between air pollutant and acute respiratory disease will provide necessary health support for the of new air quality controls and the revision of existing air quality standards.

METHOD OF SUPPORT (CHECK ONE)

__X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A)
(B) $147,500
(C)
(D) 21 AFW - 13

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS Reports on Pulmonary Function

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. Chapman, Leader

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Decrements of pulmonary function have been linked to ambient air pollution in many epidemiologic studies. These studies are designed to qualitate the relationship of pulmonary function and exposure to NO_x, SO_x, O_x, TSP, and RSP over exposure gradients. Children attending elementary schools located in CHESS areas represent an exposure gradient for specified pollutants volunteer for voluntary testing during periods when pollutant levels are seasonally lower when elevated. Thus the relative effects of season, acute pollution exposure, chronic pollution exposure can be assessed as can the effects of appropriate covariates. Technical reports elucidating the dose-response relationship between air pollutants and pulmonary function will provide necessary health support for of new air quality controls and the revision of existing air quality standards.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

(A)
(B) $147,500
(C)
(C) 21 AFW - 14

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

CHESS Reports on Effects of Acute Air Pollution Episodes

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

C. Nelson

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

These studies are designed to qualitate the dose-response relationship between the frequency of acute irritation symptoms of the eye and respiratory tract, disability and physician visits and acute ambient air pollution episodes involving the oxides of nitrogen (NO_x), oxides of sulfur (SO_x), photochemical oxidants (O_x), total suspended particulates (TSP), and respirable suspended particulates (RSP). Families participating in CHESS studies of acute respiratory disease incidence are queried to encourage the flow and elevated ambient air pollution. Relative effects of water and specific pollutant since can be quantitated. Appropriate adjustments are made for reporting bias and other co-factors. Repetitive studies will allow construction of dose-response occurs for the effects of important ambient pollutants on children and adults.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL
(Medical, graduate, etc.)

(A)
(B) $147,500
(C)
(D) 21 AFW - 15

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS Reports on Aggravation of Symptoms in Elderly

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. Calafiore, Leader

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Chronic respiratory and heart disease symptoms in the elderly have been linked to ambient air pollution in several epidemiologic studies. These studies are designed to qualitate the dose-response relationship between aggravation of symptoms in panels of elderly persons either well or sick with chronic heart and/or lung disease and acute air pollution levels of NO_x, SO_x, O_x, TSP and RSP over an exposure gradient. Panelist are recruited through local physicians, golden age clubs, churches, and other social mechanisms. Personal and demographic co-factors are qualitated by an interviewer-administered opti-scan questionnaire.. Volunteer panelists record their symptoms on opti-scan diaries which are validated by the status of the CHESS data collection contract for data processing and appraisal. Results of these prospective studies are carried in technical reports elucidating the dose-response relationship between air pollutants and chronic respiratory and heart disease symptoms prevelance and incidence.

METHOD OF SUPPORT (CHECK ONE)

_X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ________________

(A)
(B) $147,500
(C)
(D) 21 AFW - 16

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

S.I.E. NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Pesearch and Monitoring

TITLE OF PROJECT: CHESS Report on Aggravation of Asthma

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. Calafiore

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

These prospective studies are designed to qualitate the dose-response relationships between aggravation of asthma and acute ambient air pollution levels of NO_x, SO_x, O_x, TSP, and RSP over an exposure dose gradient. Asthma panelists are recruited from individuals completing the CHESS family health questionnaire and through the cooperation of physicians, clinics, and neighborhood druggists. Appropriate demographic information is obtained by personal interviews prior to entry into the study. Panelists then complete weekly diaries recording all set frequency and severity of asthma symptoms. Air quality data will be obtained from CHESS-CHAMP stations. The results of these studies will be published in technical reports elucidating the dose-response relationship between pollutants and aggravation of asthma.

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL

☐ CONTRACT

☐ GRANT

☐ INTERAGENCY AGREEMENT

☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A)
(B) $147,500
(C)
(D) 21 AFW - 17

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NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS Reports on Human Pollutant Burdens

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

A. Colucci

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

These data are designed to qualitate the dose-response relationships between human pollutant burdens essayed in hair, blood, and tissues in environmental pollutants (including metals such as As, Cd, Cr, Cu, Pb, Mn, Hs, Ni, V, Cn, and synthetic organic materials including aromatic and aliphatic halides such as PCB). Tissues and personal health information on each are collected in each of the CHESS communities. Results of these studies are published in technical reports elucidating the dose-response relationship between air pollutants and human pollutant burdens.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A)
(B) $147,500
(C)
(D) 21 AFW - 18

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS Reports on Daily Mortality

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

V. Hasselblad, Leader

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

These studies are designed to qualitate the dose-response relationships of fluctuation in daily mortality in NO_x, SO_x, O_x, TSP, and RSP over an exposure dose gradient. Daily mortality models are useful as tools for environmental assessment of pollution control. For pollution control, mortality models are useful prospectively, to predict the effect of a specific proposed action, and retrospectively to assess the effectiveness of controls of improved air quality on health is measured on mortality for environmental assessment., we know that man reacts to pollution by full spectrum of biological responses ranging from subtle physiologic changes of increase tissue pollutant burdens all the way to death; thus, mortality represents extreme of effects pyramid. Hence, daily mortality models complete the full spectrum of biological responses investigated in the CHESS program.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ________________

(A)
(B) $49,100
(C)
(D) 21 AFW - 19

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SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS Efforts to Improve Statistical Techniques

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

V. Hasselblad

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

These studies are designed to provide optimal translations of the health environmental data collection for CHESS and to qualitate the dose-response relationships. CHESS statistical technique improvements are needed to overcome problems related to serial correlation, bodily human exposure assessment of populations at risk, censused data, analysis of mixed model (categorical-continued) data, and CHESS data systems. Appropriate scientific literature will be thoroughly reviewed. Theoretical and incurable models will be constructed and employed. The computer provides primary means of evaluating the efficiency of these new procedures and is essential for the assimilation of results. The research findings will be incorporated into routine statistical analysis and data processing protocols for the CHESS information synthesis project. The findings will be distributed to other EPA research components such as community pesticide program and radiological health programs.

METHOD OF SUPPORT (CHECK ONE)

_X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A)
(B) $147,500
(C)
(D) 21 AFW - 20

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

Incurrence of Hazardous Substances on Cellular Physiology - Perrine Rapid Toxicologic Screen in Perrine

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. David Coffin

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The greatest concern of environmental pollution control officials is the protection of human health or welfare against effects of chronic exposure to low levels toxic materials. This project is to develop a rapid toxixologic screening system, using self culture lines, to evaluate need for more definitive studies of potential hazardous substances including trace metals, synthetic and natural organics, oxidants and NO_2. Information related to these types of effects can be obtained first from the vitro systems to learn something of the dose-response relationship and the mechanisms of action. These preliminary data provide the basic tools with which studies of animals or humans can be undertaken.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

X GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A).
(B) $129,800
(C)
(D) 21 AFB - 02

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: Effects of Air Pollutants on Pulmonary Defense Mechanisms

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. David Coffin

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Many studies have demonstrated increase incidence of disease in areas of high air pollution. This task is designed to determine the mechanism of pollutant action that produces this greater level of illness in the dose-response relationship at various exposures. Specifically this task will evaluate the effects of input inhalation of selected pollutants on the pathogenesis of permanent pulmonary disease.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____

(A)
(B) $172,100
(C)
(D) 21 AFU - 02

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: Interaction of Various Air Pollutants on Causation of Pulmonary Disease

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Richard Ehrlich

NAME AND ADDRESS OF INSTITUTION:

RT Research Institute
10 West 35th Street
Chicago, Illinois 60616

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This is a continuing contract. Previous work with the contractor has assisted with the development of techniques and methods used in model system which is being used to evaluate the effects of inhalation of selected pollutants on the pathogenesis of pulmonary disease. This contract is in support of 21 AFU - 02.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
_X CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

(A)
(B) $64,000
(C)
(D) 21 AFU - 03

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE.

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: Procurement of Human Environmental Exposure Facilities

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. John Knelson

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Control laboratory studies of physiologic and behavorial responses ~~in~~ humans exposed to selected pollutants, odors, noise and microwave radiation are important to EPA objectives. This purpose of this task is to provide EPA with intramural capability in human environmental health effects research. The end product of this task is an intramural human environmental exposure facility available to respond to EPA requirements for data relating human health and welfare to environmental conditions.

METHOD OF SUPPORT (CHECK ONE)
_X_ INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL
(medical, graduate, etc.)

(A)
(B) $378,000
(C)
(D) 21 AFU - 04 and 21 AFP - 02

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

Effects of CO in Persons With Coronary Artery Disease

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. John Knelson

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

CO interferes with tissue oxygenation. Tissues such as the heart which depends on uninterrupted O_2 supply for survival, might be particularly susceptible to hypoxid effects of CO. Twelve patients with staple angina pectoris will be recruited from the outpatient department at NC Memorial Hospital. On each of 5 successive days they will be exposed to either air, 50 ppm or 100ppm CO for 5 hours in a double blind manner. Following exposure, they undergo exercise electrocardiography in measurement of systolic time intervals before and after exercise. Expired air and blood COHb levels will be measured before and after each exposure. Patients with angina pectoris may have decreased exercise tolerance and pain threshold, or markedly abnormal exercise EKG.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A)
(B) $98,300
(C)
(D) 21 AFU - 07

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: Physiologic and Pathologic Studies of Pulmonary Response to Hydrocarbon Air Pollutants in Syrian Golden Hamsters

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. David Coffin

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Much information has been collected on the identification of airborne hydrocarbons as carcinogens in particular experimental situtations. However, little is known concerning the efficiency of the carcinogens when inhaled or/but dose-response relationships. In this study we proposed to develop and utilize the model system using inhalation techniques to study the dose pathologic and physiologic response relationships between animals and hydrocarbons previously shown to be carcinogenic by intratracheal methods.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A)
(B) $100,000
(C)
(D) 21 AFU - 08

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: Influence of Environmental Pollutants on Red Blood Cell Function

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. David Coffin

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Health effects of pollutants began as subtle alterations in metabolic and physiologic activity which only add to increase or extended exposure develop into significant illness. Since blood is the second interface between man and his environment it is logical that many of these subtle effects may occur here. Blood changes could be determined relatively easily in populations, also if the laboratory studies could develop appropriate tests to be used. This study will determine the effect of pollutants on the ability of blood to transport oxygen and maintain viable erythrocytes.

METHOD OF SUPPORT (CHECK ONE)

✓ INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

(A)
(B) $61,000
(C)
(D) 21 AFU - 9

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: Investigation of Growth of Lung Function in Children

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. John Knelson

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

As a result of limited methods available for testing lung functions in children, established normal values are incomplete (especially in per-school age). Adaptation of supplementation of present used pulmonary function tests for children, with longitudinal study of a group of children would provide the improved methods and more precise normal values upon which to base future studies of the effect of environmental pollution on the growth of lung function in children. Unevasive tests such as biometry plethysmoraphy, or analysis expiratory gas concentration curves will be used. The possibility of mall exercise exposure in small sole abnormalities in lung function will be investigated.

METHOD OF SUPPORT (CHECK ONE)

- X INTRAMURAL
- __ CONTRACT
- __ GRANT
- __ INTERAGENCY AGREEMENT
- __ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A)
(B) $64,900
(C)
(D) 21 AFU - 10

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: Effects of CO in Myocardial Infarction

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. John Knelson

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Both theoretical and epidemiological data suggest an increase morbidity in patients with ischemic heart disease when exposed to air pollution. This study is designed to determine the role of carbon monoxide in the natural history ischemic heart disease. Pigs will have a myocardial infarction induced by placing an ameroid constrictor around a coronary artery. In a control method half the pigs will be exposed to 100 PPCO. Parameters to be followed for each group include: aim for survival, incidence and arrhythmias, and pathological examination. It is expected that there will be statistically significant increase in morbidity, and possible mortality, in the pigs exposed to carbon monoxide.

METHOD OF SUPPORT (CHECK ONE)

__X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL
(medical, [illegible], etc.) __________

(A)
(B) $46,200
(C)
(D) 21 AFU - 14

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.
(AP 01323) 800848

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

Effects of Atmospheric Pollutants on Lung Development

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Donald Bartlett M.D.

NAME AND ADDRESS OF INSTITUTION:

Darthmouth Medical School
Hanover, N.H. 03755

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Study is designed to determine if chronic exposure of young rats to ozone and NO_x beginning at the weanling stage, alters the normal development of alveoli of the lung. When effects are observed, recovery times during subsequent exposure to clean air are determined.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

X GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________________

(A)
(B) Amount $15,000 per annum
(C)
(D) 21 AFU - 26

SI-SIE-7&A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.
7GX-848-16
AGENCY NO.
(AP 00084-17)

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

Physiological Response to Atmospheric Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Professor M.O. Amdur - Physiology

NAME AND ADDRESS OF INSTITUTION:

Harvard University
School of Public Health
55 Shattuck
Boston, Massachusettes 02115

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The changes in the mechanical behavior of the longs of unanesthetized guinea pigs are used to assess the response to respiratory irritants. Emphasis continues to be on the effect of inert aerosols on the degree of response to irritant gases, with special attention to sulfur dioxide. The problem of the potency of irritant aerosols of different particle sizes will also remain an area of consideration.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________

(A) 9/71 - 8/72
(B) $60,000
(C)
(D) 21 AFU - 27

SI-SIE-7BA REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.
(AP 00607) 800689

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

Pseudomonas in Tissue Cultures of Guinea Pig Lungs

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. R. P. Sherwin

NAME AND ADDRESS OF INSTITUTION:
University of Southern California, School of Medicine
2025 Zonal Avenue, Los Angeles, California 90033

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This is a continuing study which has shown that low levels of NO_x may be responsible for damages to the guinea pig lung by upsetting the ecologic balance of microbes and cells in the airways and airspaces. There also has been found an unidentified organism in guinea pig lungs which appears to be protected from the major defense mechanisms. This study now is investigating the effect of pollutant exposure on its life cycle.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

_X GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (Medical, [illegible]) ____________

(A)
(B) $33,165
(C)
(D) 21 AFU - 28

SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.
(AP 00774-02S1) 800881

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

A Biologic Indicator for Air Pollution

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. R.P. Sherwin

NAME AND ADDRESS OF INSTITUTION:
University of Southern California - School of Medicine
2025 Zonal Avenue - Los Angeles, California 90033

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A recently developed biologic index for air pollution, based on the exposure of guinea pigs to low levels of NO_2 (15 ppm) and an increase in the number of alveolar wall cells (lactic acid dehydrogenase positive) per alveolus, will be applied in a series of experiments to determine the sensitivity, specificity, and time distribution of the test. Once reference baselines are established, the relative influence on the index of a variety of gases, singly and in combination, will be investigated. Data will be obtained in the important areas of a) minimum ambient levels of air pollutants (singly and in combination) that will produce an elevation in the response, b) synergism and antagonism of air pollutants, c) patterns of response according to the time and level of exposure, d) the role of suspended particles (carbon) as a vehicle for focal deposition of high levels of air pollutants, and e) variations of the index in five different ambient atmospheres (major cities and rural areas) over a period of 40 weeks. The study will ultimately be extended to comparisons of species differences and, in particular, the relationship of the index in human lungs (accidental deaths and operations) to major residential location, cigarette smoking, occupation, age, and sex.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________________

(A)
(B) $41,731
(C)
(D) 21 AFU - 29

SI-SIE-78A, REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

S.I.E. NO.

AGENCY NO.
(AP 00838-03) 800064

SUPPORTING AGENCY Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

Chronic Lung Disease Response to Pollution Free Air

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. S.M. Ayres - Cardiopulmonary Lab

NAME AND ADDRESS OF INSTITUTION:
Saint Vincents Hospital Medical Center
153 W. 11th Street - New York, New York 10011

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Residency in a controlled environment is being studied as to its effects on pulmoanry function in patients with chronic airway obstructive disease. Outside air entering the unit is passed through high efficiency particulate and activated charcoal filters. This prefiltered air is then refiltered in a unit directly over the beds of the patients. Temperature, humidity, and particle size are controlled however, carbon monoxide is not. Patients with a variety of diagnoses are measured daily on selected pulmonary function tests including maximum flow FEV1, FEV2, and vital capacity. Improvement is measured in terms of increased pulmonary function

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL
[illegible] ____________

(A)
(B) $32,000
(C)
(D) 21 AFU - 30

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.
AP 00489-06 800988

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: Air Pollution Medical Research Conference

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

F. W. Barton - Environmental Health

NAME AND ADDRESS OF INSTITUTION:
American Medical Association
Chicago, Illinois 60610

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The series of Air Pollution Medical Research Conferences are high-level scientific-medical meetings designed to provide a means for the reporting, discussion, and publication of original research findings on the health effects of air pollution. The significance of these conferences to the medical profession goes beyond air pollution to the course and development of chronic respiratory disease, effects of inhalants, mechanisms of infiltrative lung diseases, tissue and sputum changes, role of infectious agents and other biological factors, carcinogenesis, cell physiology, and toxicology at the biochemical level in the pollutant environment, synergisms, human body burdens, and new epidemiological techniques and research methodologies. A special effort is made to present reports of scientific research to members of the medical profession, allied professions and the general public who are most involved in the use of those results in a form they could best understand and take appropriate action.

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

(A)
(B) $10,000
(C)
(D) 21 AFU - 31

SI-SIE-76A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.
(AP 01655) 801636

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

Air Pollution Effects on Respiratory Neucosa

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. T.T. Crocker - Medicine

NAME AND ADDRESS OF INSTITUTION:
University of California Irving
School of Medicine - Irving, California

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Using a tracheo-bronchial organ culture system, determine if respiratory carcinogens such as benzpyrene and other polynuclear hydrocarbons, nitrosomethylurethane, or others, when applied to explants of human tracehaor bronchus, cause the same development of squamous metaplasia, cellular pleomorphism, atypia, or other pre-neoplastic changes, that they cause when applied to explants of trachea or bronchus from rodents and primates. Determine if the administration of Vitamin A to organ cultures of tracheobronchial epithelium, either before, during, or after the administration of chemical carcinogens such as benzpyrene, nitrosomethylurethane or nitrosamines, block the development of pre-neoplastic changes caused by these carcinogens. Determine if this effect is similar in animals and in man. Using a tracheo-bronchial organ culture system investigator is used to determine the effects od ambient levels of air pollutants, singly and in combination on the quantity and quality of mucous production.

METHOD OF SUPPORT (CHECK ONE)

___ INTRAMURAL

___ CONTRACT

___ GRANT

___ INTERAGENCY AGREEMENT

___ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL
[illegible] ____________________

(A)
(B) $36,000
(C)
(D) 21 AFU - 32

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.
(AP 01075-02) 801003

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

Respiratory Tract Air Pollutants and Biological Agents

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. C.G. Loosli - Medicine

NAME AND ADDRESS OF INSTITUTION:
University of Southern California - School of Medicine
2025 Zonal Avenue - Los Angeles, California 90033

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Studies are concerned with the role of certain known air pollutants, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3) and carbon monoxide (CO), airborne inorganic particulates, and biological agents (Staphylococcus aureus and influenza PR8-A virus), alone and in combination, on the health and particularly the lungs of pathogen free mice. Comparable control groups of mice of similar age and strain are housed in filtered air rooms. Pathogen free mice are exposed for 24 months to a "synthetic smog" (SS) composed of NO_2, SO_2 and CO in amounts found in ambient Los Angeles air. Similar groups of mice are housed in a filtered air room (FA). Sufficient animals are exposed so that smaller groups of SS and FA exposed mice can be sacrificed for detailed study of the lungs by histological, histochemical, biochemical and electron microscopic procedures. Mice living in SS and FA also are exposed to particulates collected from the Los Angeles atmosphere. Likewise, mice in SS and FA are subjected to airborne influenza virus or staphylococcus aureus to assess the role of these biologcial agents in producing changes in respiratory tract structure. The above studies are designed to evaluate the respective roles of gaseous, inorganic particulates, and biological agents in the production of lung lesions which might resemble chronic bronchitis or emphysema in man.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

✓ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ______

(A)
(B) \$36,000
(C)
(D) 21 AFU - 33

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS Biometric, Aerometric Operations

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

F. Benson

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

CHESS bioenvironmental measurement provides for biological and environmental surveillance necessary for health effects studies. This project, environmental surveillance and quality control methods are specified, air monitoring stations are established for CHESS communities; environmental and biological samples conveyed from the field are analyzed and appropriate atmosphere models are constructed. This task is designed to establish, operate, entering the regular CHESS continuing air monitoring programs (CHESS-CHAMP) stations. Aerometric data is checked for errors, discrepancies, validated, summarized, and stored in the Division data bank as well as disabled systems.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

(A)
(B) $245,800
(C)
(D) 21 AFW -03

SI-SIE-78A; REV. 6-64

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS - Chattanooga Data Collection

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Jackson

NAME AND ADDRESS OF INSTITUTION:
Research Triangle Institute
Research Triangle Park, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The CHESS program in Chattanooga is designed to qualitate posssible adverse health effects in urban populations primarily to high levels of nitrogen dioxide and to other pollutants associated with an industrial area. Current CHESS Chattanooga area programs will form the basis for continued studies. Refinements in protocols, based upon previous experience, increase effectiveness of data in measurement collection. This task involves only the collection of health data and the monitoring of aerometric data. The operations of aerometric stations in collection of air pollution samples is not under contract with the Chattanooga State Technical Institute, Chattanooga, Tennessee.

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
_x_ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A)
(B) $180,000
(C)
(D) 21 AFW - 04

SI-SIE-78A, REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

CHESS - Los Angeles Basin Studies Data Collection

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

C. R. Thompson Dave Flesh

NAME AND ADDRESS OF INSTITUTION:

State Wyatt Air Pollution Research Center
University of California - Riverside, California

Copley International Incorporated

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Los Angeles basin residents are exposed to complex urban air pollution mixtures of photochemical oxidants associated with mobile source emissions. Possible adverse health effects due to these multi-media exposures must be determined. This task is designed to qualitate exposures to photochemical oxidants to determine any possible adverse health effects resulting from these exposures. The contract - University of California, Riverside is for collection of aerometric data and of four communities. Contract for Copley is for collecting health data in the other three communities. CRC is putting two-thirds of Copley's contract under is their share of CAPM-11.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
x CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) __________

(A)
(B) $360,000
(C)
(D) 21 AFW - 05

SI-SIE-76A, REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

S.I.E. NO.

AGENCY NO.

SUPPORTING AGENCY Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:
CHESS New York Metropolitan Studies Data Collection

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NAME AND ADDRESS OF INSTITUTION:
Medical and Health Association of New York
New York City, New York

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

New Yorkers are exposed to complex urban air pollution mixtures including particulates, oxides of sulfur, carbon monoxide, oxides of nitrogen, trace metals, and products of combustion including fossil fuels and solid waste. Possible adverse health effects due to these multi-media exposures must be determined. The CHESS program in the New York City area is designed to qualitate possible adverse health effects in urban populations simultaneously exposed to particulates, carbon monoxide, oxides of sulfur, nitrogen, trace metals, and products of fossil fuel combustions as well as waste disposal. This task is in contract as a responsibility of collecting raw health data in operating the aerometric stations and transmitting the raw aerometric data to the Division in North Carolina.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL
(medical, graduate, etc.)

(A)
(B) $339,200
(C)
(D) 21 AFW - 06

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: St. Louis Regional Air Pollution Studies - CHESS Data Collection

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Ryckman, Edgerley and Tomlinson and associates
St. Louis, Missouri

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Possible adverse effects due to exposures specify stationary sources, including airports, have not been well defined. Also, possible adverse health effects of inner-city residents due to exposure to high levels of pollution has not been well defined either. These effects can be ideally studied in St. Louis. These studies are designed to qualitate possible adverse health effects in urban populations in inner-cities exposed to stationary sources of air pollution. Current CHESS area programs will form the basis for CHESS St. Louis studies. CHESS-CHAMP will be employed in St. Louis from the beginning of the studies. Raw data collected from St. Louis CHESS network will be fed to CHESS information synthesis and data analysis in the Research Triangle Park.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

_x CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL
(medical, graduate, etc.)

(A)
(B) $300,000
(C)
(D) 21 AFW - 26

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT: CHESS Southeast - Data Collection

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mecklenburg County Department of Health, Charlotte, N.C.
University of Alabama Medical Center, Birmingham, Alabama

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Possible adverse health effects due to exposures to high levels of particulates with low levels of other pollutants can be determined uniquely in the Southeast. These data are designed to qualitate possible adverse health effects in urban populations exposed primarily to particulate matter. Current CHESS Southeast area programs form the basis for continued studies. Refinement of protocols based upon previous experience will increase effectively the data in measurement collection to health indicators, pollution measurements, population at risk must be added for an optimal program. The contracts, are for the operation of CHESS aerometric stations. Collection of raw, aerometric data and the collection of raw health data which are forwarded to CHESS, Research Triangle Park for storage and analysis.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

_X CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, [illegible]) ____________________

(A)
(B) $350,000
(C)
(D) 21 AFW - 24

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

CHESS - Utah Data Collection

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. W. Southwick

NAME AND ADDRESS OF INSTITUTION:
Utah State Department for Social Services
Department of Health

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Possible adverse health effects due to primary exposure to sulfur oxides with low levels of other pollutants can be determined uniquely in Utah. These studies in Utah are designed to qualitate adverse health effects due primarily to sulfur oxide exposures. Current CHESS Utah area programs will form the basis for continued studies. The contractors for operation of the aerometric network collection of raw aerometric data and raw health data which will be fed to CHESS in Research Triangle Park.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

_X_ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______________________

PROFESSIONAL SCHOOL (Medical, Dental, etc.) ______________________

(A)
(B) $170,000
(C)
(D) 21 AFW - 25

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.
APO-155-01A1

SUPPORTING AGENCY Environmental Protection Agency - Office of Research and Monitoring

TITLE OF PROJECT:

Effects of Atmospheric Pollution on Human Lung Function

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Jack D. Hackney, M.D., 359-12-5322, Chief, Environmental Health Research, Medical Science Service, Rancho Los Amigos Hospital, Principal Investigator

Clarence R. Collier, M.D., 337-14-3317, Professor of Medicine and Physiology, USC, Co-investigator

Frederick C. Thiede, Ph.D., 379-24-2147, Respiratory Physiologist, Medical Science Service, Rancho Los Amigos Hospital, Co-investigator

NAME AND ADDRESS OF INSTITUTION:

Rancho Los Amigos Hospital, Inc. - 12826 Howthorn Street, Downey, California 90242

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

At Rancho Los Amigos Hospital, we have a highly-specialized environmental control facility in which temperature and humidity can be maintained and ambient air purified, so that only negligible amounts of particulates or gaseous pollutants remain. We will study human physiologcial response to atmospheric pollutants by methods that are especially sensitive for detecting changes in peripheral airways and abnormalities in the matching of ventilation and blood flow within the lungs. Experiments, both at rest and during exercise, will be done first against a background of no pollutant challenge and then with challenges of realistic concentrations of specific pollutant gases (oxides of nitrogen, ozone) or ambient polluted air. Normal subjects, as well as patients with mild to moderate obstructive lung disease, will be studied.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

X GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (Medical, Dental, etc.)

(A)
(B) $61,800
(C)
(D) 21 AFU - 25

DIVISION OF CONTROL SYSTEMS

SI-SIE-76A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT:

Pulsed Power Supply for Electrostatic Precipitators

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

James A. Finney, Jr.
John V. Leonard

NAME AND ADDRESS OF INSTITUTION:

Belco Pollution Control Corporation
570 W. Mt. Pleasant Avenue
Livingston, N. J. 07039

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Pulsed power supplies have considerable potential for upgrading the performance of existing electrostatic precipitators and reducing the collection area (i.e., size) required of new precipitators to meet a given collection efficiency. The expected advantages of the pulsed power supply are attributable to (1) an increased degree of electrical sectionalization over that economically feasible with conventional power supplies, and (2) a voltage wave-form permitting a higher effective voltage than possible with conventional supplies, thereby increasing the charge on the particle and hence the precipitator collection efficiency. Previous work has shown that to be economically feasible, the pulsed power supply must include the switching mechanism required to commute the pulses and power multiple precipitator sections.

The present project provides for the design, construction, and evaluation of a pulsed power supply capable of powering four electrical sections of a full scale precipitator. This prototype supply will be fully bench tested with a simulated precipitator load, after which it will be installed on one half of an operating precipitator at a TVA coal fired power plant for direct performance comparison with the conventionally powered half under controlled conditions.

Start 6/70; anticipated completion 6/73

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR R. C. Lorentz

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

A. 6/70 - 10/72
B. $253,000 Total
C. -
D. 21 ADJ-25

CPA 70-153

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT:

Electrostatic Precipitator Performance Model

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Saybert Oglesby, Jr.
Grady B. Nichols
John P. Gooch

NAME AND ADDRESS OF INSTITUTION:

Southern Research Institute
2000 Ninth Ave., South
Birmingham, Alabama 35205

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Under a previous contract an electrostatic precipitator performance model has been developed based on theoretical considerations and experimental work with a pilot precipitator which was designed and built for the purpose. The model permits prediction of performance from precipitator design and operating parameters and dust properties. To realize the benefit of these developments and improve and test the validity of the performance model, it is necessary to apply the model to the design of improved systems having increased collection efficiency in the fine particle range, particularly with dusts of high resistivity. This project provides for initiation of work toward this objective principally by theoretical and experimental examination of the advantages of special precharging sections, determination of fractional efficiencies for fine particles, and relationships between and limitations of operating variables caused by dust resistivity. The ultimate objective is to develop the basis for electrostatic precipitator designs having higher efficiency in the fine particle range and to maximize the efficiency of precipitators in the collection of high resistivity dusts such as those resulting from use of low sulfur coals.

By computerized performance model, the preferred electrode factors to maximize current density and sparkover voltage in special charging sections of an existing pilot precipitator will be determined, followed by experimental confirmation using coal flyash and selected high resistivity and fine particle size dusts. Effects of diffusion charging for fine particles and the relation of voltage drop in dust layer to dust resistivity, current density, and dust thickness will be investigated. In-situ dust resistivity values will be related to resistivity values inferred from precipitator performance. Volt-ampere characteristics will be determined for a full scale flyash precipitator and relationships confirmed between in-situ resistivity and and appropriate actual operating characteristics.

METHOD OF SUPPORT (CHECK ONE)

___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR R. C. Lorentz

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

A. 4/72 - 4/73
B. $65,000
C. -
D. 21 ADJ-26

68-02-0265

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT: Study of Fabric Filter Cleaning Methods

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Richard Dennis, Director, Pollution Control Laboratory
Dr. John Wilder, Senior Scientist

NAME AND ADDRESS OF INSTITUTION:
GCA Technology Division
Bedford, Mass. 01730

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this study is to characterize and quantify the mechanisms and kinetics in the process of fabric filter cleaning in terms of variables such as frequency, amplitude, force, duration, energy distribution, energy wave form and intensity; and to relate these to cleaning effectiveness and to fabric filter performance (pressure drop, efficiency, fabric life). A versatile fabric filter unit has been constructed which is capable of operating over a wide range of cleaning conditions for various cleaning modes including mechanical shake, pulse jet, and reverse flow. Tests have been conducted for each cleaning mode with a variety of fabrics and dusts. Results from this study are being analyzed to develop concise statements and/or equations which provide practical means for selection of the optimum cleaning cycle for a specific application. The project started in August, 1970 and is scheduled to be completed in October, 1972.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: Dale L Harmon

PROFESSIONAL SCHOOL (medical, graduate, etc.): Project Officer, CSD
(Supporting Agency)

A. August 1970 to October 1972
B. $278,286
C. -
D. 21ADJ-49

SI-SIE-70A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Fabric Characterization - Composition and Construction Effects

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dean C. Draemel, Engineer, RLB, CSD
J. H. Abbott, Section Chief, RLB, CSD

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The goal of this project is the quantitative characterization of the effects of fabric parameters on filtration performance. Fabrics will be tested for filtration performance on in-house single bag units. Supplemental tests will be performed on contract to completely characterize the physical characteristics of the fabrics. In addition, small samples of fabrics will be tested on a bench scale filtration apparatus and microscopically examined for filtration characteristics. More accurate correlation between fabric parameters and filtration performance would be used to design and optimize fabrics for specific filtration applications.

This project was started in July, 1970 and will be completed by January, 1973.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Dean Draemel

PROFESSIONAL SCHOOL (medical, graduate, etc.) RLB, CSD

(A) Dates of current project authorization: 7/72 - 6/73
(B) Annual level of effort: $20,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ADJ 51

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Determine Effects of Fabric Composition & Finish on Filter Bag Life at High Temperatures

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. James H. Turner, Chemical Engineer, CSD, RLB
J. H. Abbott - Section Chief, CSD, RLB

NAME AND ADDRESS OF INSTITUTION:

EPA-NERC-RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Fabric filtration will ordinarily allow 99+% particulate removal efficiency. At present, filter bag fabrics limit use to gas streams below about 550°F. The present research is aimed at finding fabrics or finishes for fabrics that will allow higher temperature filtration or will extend the life of bags at presently used temperatures. Such fabrics will extend fabric filtration usage and enhance overall industrial particulate collection. An experimental high temperature baghouse has been constructed which allows endurance testing of bags under simulated field conditions. As proprietary or other fabrics become available, bags are made and run to failure; then examined for type, location and possible cause of failure. Comparison of endurance and of failure modes should lead to selection of improved types of fabrics and finishes. This project started about 1959, led to the present use of silicone graphite glass fiber bags, and is planned to continue through June 1977.

METHOD OF SUPPORT (CHECK ONE)
x INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR James H. Turner
James H. Turner, Ph.D.

PROFESSIONAL SCHOOL (medical, graduate, etc.) RLB, CSD

(A) Dates of current project authorization: 7/68 - 6/73
(B) Annual level of effort: $25,000
(C) Multiple Funding: None
(D) I. D. Number: 21ADJ 53

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT:
Detailed Design and Construction of Particulate Aerodynamic Test Facility

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Larry Anderson
Mr. William Lapson

NAME AND ADDRESS OF INSTITUTION: Aerotherm Division Accurex Corporation
Mountain View, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This effort will design and construct a particulate aerodynamic test facility for use by PLB-CSD to study basic particle flow and particulate collection mechanisms, develop and calibrate gas flow equipment and evaluate particle measuring techniques. The unit will be capable of simulating flue gas composition, flow regimes and temperatures as found in and around stationary source control equipment. A two-foot diameter test section, 40 feet long, with flow velocities up to 90 fps will be available. The unit employs flue gas recirculation with once through particulate flow. Temperature control is 70-500°F, humidity 5-95%, velocity 5 to 90 feet/second and solids loading from 0-5 grains per cubic foot. Project was initiated December, 1970 and will be completed September, 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
X CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D Bruce Harris
D. Bruce Harris

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 9/72 - 9/73
(B) Annual level of effort in dollars: $250,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ADJ 80

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT:
Systems of Charged Droplets and Electric Fields for Removal of Sub-Micron Particulates from Industrial Gases

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. R. Melcher, Professor, Department of Electrical Engineering

NAME AND ADDRESS OF INSTITUTION:
Massachusetts Institute of Technology
Department of Electrical Engineering
Cambridge, Massachusetts

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary objective of this project is the investigation of new technology for the control of fine (sub-micron) particulate emissions. The major emphasis is described in tasks to:

a. Develop a system for producing droplets of controlled charge and size for injection into a test tunnel to remove typical loadings of particles in the sub-micron range.
b. Develop a system for injecting monodisperse sub-micron charged particles typical of industrial particulate to be used for test purposes.
c. Develop an isokinetic sampling device to sample the mixture of drops and dusty gas at positions throughout an interaction region, and use inertial techniques to separate the drops and measure the collected particle mass.
d. Develop a scattering system for measuring the density of the particulate under the basically monodisperse conditions provided by the injection scheme described above.
e. Investigate electrohydrodynamic spraying techniques for the large-scale production of charged droplets in the size range of approximately 5-100 microns.
f. Make preliminary tests of the interaction between the charged drops and particles in a region essentially free of ambient electric field.

The project was started in December, 1971 and should be completed in December, 1973.

METHOD OF SUPPORT (CHECK ONE)
☐ INTRAMURAL
☒ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR
D. C. Drehmel
Project Officer
(Supporting Agency)

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) Current Authorization: December, 1971 - December, 1972
(B) Annual level of effort in dollars: $32,600
(C) Multiple Funding: None
(D) I. D. Number: ~~Not in ROAP~~, (EPA Contract No. 68-02-0250)

ADL-03

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Using Theoretical Calculations and In-House Experiments Verify Feasibility of Proprietary Concepts or Devices for Fine Particle Control

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. C. Drehmel, Research Chemical Engineer
Joshua S. Bowen, Special Projects Section, Chief

NAME AND ADDRESS OF INSTITUTION:

EPA-NERC-RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This in-house project to assess the technical feasibility of proprietary fine particulate control technology should increase the probability that EPA will fund the development of those approaches which have the greatest chance of success.
The tasks included under this project are as follows:
a. The open literature, manufacturer's information, patents and other claims will be reviewed to identify concepts and devices which are pertinent to fine particulate control technology.
b. Theoretical studies will be done to test these concepts and devices as to the feasibility of the basic operating principles. Example of possible concepts are condensation agglomeration, electrostatic agglomeration, sonic agglomeration, oil mist agglomeration, magnetic transport effects, and foam scrubbing.
c. Concepts and devices, found to be feasible from a theoretical standpoint, will be tested further through experimentation. Equipment which may be purchased for the experiments includes a droplet charging apparatus, high voltage power apparatus, resonance chamber, sound generators capable of operating in the audible to ultrasonic range, a foam generator, foam breaking devices, and an oil mist generator. Following assembly of the apparatus and test loops, statistical experimental programs will be designed to generate data for engineering and economic evaluation of the concepts and devices of interest. Recommendations from these tests should result in the development and demonstration of the most promising concepts for fine particulate control technology. This project started in July, 1972 should continue through June, 1978.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) D. C. Drehmel
[illegible]

(A) Dates of current project authorization: 7/72 through 6/73
(B) Annual level of effort in dollars: $40,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ADL 07

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT:

Wet Scrubber Development

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Seymour Calvert, APT Principal Investigator

NAME AND ADDRESS OF INSTITUTION:

APT, Inc.
P. O. Box 71
Riverside, California 92502

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Conventional particulate control scrubbers require excessive power input to collect fine particles. Theoretical and experimental studies have shown that the collection of fine particles by low energy scrubbers is possible in a condensing steam environment. However, there has not been a quantitative study of the practical and economic feasibility of utilizing condensation effects to collect fine particles. Nor are equations available to enable the design engineer to determine the optimum system for utilizing the condensation effects. The objectives of this project are to assess the feasibility of utilizing condensation effects to collect fine particles, determine the optimum systems for utilizing condensation effects and develop design equations for condensation systems.

The contractor will conduct a theoretical study of and develop necesary mathematical relationships to quantitatively predict the effect of condensation effects on the collection of fine particles in scrubbers. The contractor will conduct an experimental program to determine the validity of the theoretical analysis for the two most promising configurations. Based on the theoretical and experimental results the contractor will perform an engineering and cost analysis of the condensation scrubber systems.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Leslie Sparks

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer CSD
(Supporting Agency)

A. February 1972 - March 1973
B. $155,427
C. -
D. 21ADM-08

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Study Proprietary Scrubber Devices and Systems on Bench Scale as a Screening Mechanism for Subsequent Pilot Scale Test

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dennis C. Drehmel, Research Chemical Engineer
Joshua S. Bowen, Special Projects Section

NAME AND ADDRESS OF INSTITUTION:
EPA-NERC-RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The efficient control of fine particle (less than 1 micron) pollutants requires the development of improved aqueous scrubbers for certain applications. Related contracts will be supported by this in-house project, planned to evaluate proprietary concepts and to establish research data indicating requirements for future research planning.

The initial work will concentrate on setting up the capability for future testing. Bench scale scrubber experiment trains will be built to accept scrubbers supplied by others. Equipment to be purchased includes:two aerosol generators of different types, a particle counting instrument, a Cascade impactor for particle size distribution analysis, air conditioners for control of inlet gas temperature/humidity, and fans, pumps, duct, pipe,etc.

Representative scrubbers of standard design employing either plates, packing, spray, centrifugal flow, impingement or entrainment will be acquired also, and used for comparison purposes.

Concurrently, the identification of scrubbing devices and systems to be evaluated will be underway. Among the sources expected to suggest new scrubbers are patents, manufacturer's advertisements, unsolicited proposals, grant applications, and spin-off's from contract work. The selection of the new scrubbing devices or systems will be based on a brief initial evaluation of their economic feasibility. Either the manufacturer will supply the test device or a replica will be assembled by the Government. The devices will be tested for mass reduction, particle size efficiency, energy requirements, and control of special particulate and compared to standard scrubbers previously tested. Relative engineering and economic feasibility and applicability to special sources will be determined. This project started in September 1972 and will continue through June 1973.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) Dennis C. Drehmel
[illegible]

(A) Dates of current project authorization: 7/72 - 6/73
(B) Annual level of effort in dollars: $ 40,000
(C) Multiple Funding: none
(D) I. D. Number 21 ADM 09

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT:
Development of Particulate Sampler and Analysis

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. Bruce Harris
James A. Dorsey, Section Chief

NAME AND ADDRESS OF INSTITUTION:

EPA-NERC-RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Many control device evaluation sampling situations are increasingly becoming extremely long due to the high efficiency of the device being tested and the low flow of the commercially available samplers. This project will update a mass sampler used by PMS CSD personnel for approximately seven years and make it available to the general public. An increase in the sample flow from 0.75 cfm to 4-5 cfm is to be expected with a proportional decrease in sampling time. Emphasis will be placed on portability and ease of field use. Supporting research will be conducted on a small wind tunnel capable of handling dust to evaluate pilot sensing elements and nozzle configurations. Efforts will also be extended to incorporate an inertial impactor within the mass unit. Evaluations will be based on existing off line particle sizing equipment available (Coulter T, Sedigraph 500, Bahco, microscope). Project initiation is July, 1972 and will be completed June, 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D. Bruce Harris
D. Bruce Harris
PLB, CSD

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

(A) Dates of current project authorization: 7/72 - 7/73
(B) Annual level of effort in dollars: $50,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ADM 12

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Particle Sizing Techniques for Control Device Evaluation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Alvin [illegible]. Bird, Jr.,,Head, Physics Section, Engr. & Physical Sciences Department
Joseph [illegible]. McCain

NAME AND ADDRESS OF INSTITUTION: Southern Research Institute
Birmingham, Alabama

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The emphasis in evaluation of particulate control devices is shifting from gross mass to particle size efficiency. This study will evaluate a prototype system and devices commercially available which claim to be able to function in-situ. Most units tested will be inertial separators. The prototype system will investigate techniques to lower the detectable size range to those particles less than 0.1 μm using diffusion batteries and condensation nuclei counters. Testing will be conducted in the field on actual industrial control equipment to compare operational characteristics. Subsequent laboratory calibration of those devices found to be field operational will be carried out using particle generators and optical evaluation. The study was initiated in June, 1972 and will continue through June, 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D. Bruce Harris

PROFESSIONAL SCHOOL (medical, graduate, etc.) D. Bruce Harris
Project Officer, CSD
(Supporting Agency

(A) Dates of current project authorization: 6/72 - 1/73
(B) Annual level of effort in dollars: $60,000
(C) Multiple funding: None
(D) I. D. Number: 21 ADL 42

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Determine the Reactivity Between Limestone and Hydrogen Sulfide in Producer Gas

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. P. S. Lewis, Research Engineer

NAME AND ADDRESS OF INSTITUTION: U. S. Bureau of Mines
Morgantown Energy Research Center
Morgantown, West Virginia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The reactivity of seven limestones (Iceland spar, fine-grained calcite, high purity dolomite, aragonite, marble, marl and chalk) with H_2S will be determined under coal gasification conditions. The work will comprise the following:

1. Potential applications for solid sorbents removing H_2S from process streams such as coal gasification will be reviewed and summarized in a report. Demand to year 2000 for gas produced from coal and sorbents to control H_2S emitting from coal gasification will be estimated.

2. Published studies pertaining to reactivity between H_2S and solid sorbents especially calcined limestones will be reviewed and summarized in a report.

3. An existing sorption system and a new system under construction will be capable of contacting solid sorbents in fixed bed with producer gas over the range 1,000° to 1,400°F and pressures up to 300 psig. Special simulated reducing gases will be investigated to the extent determined feasible by the Bureau of Mines and EPA.

4. Sensitivity tests will be performed on one limestone to determine the effect of test parameters at several temperatures from 1,000° up to 1,400°F. Appropriate constant conditions of bed height, gas velocity, and test duration will be determined for use in the reactivity tests which follow.

5. Sorbent reactivity will be determined by performing a 3-factor, 5-level composite factorial experiment for each of the seven limestone types. Results will show the effect of pressure, temperature, and particle size over a practical range.

The work is expected to commence in November, 1972 and be completed in May, 1974.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
[✓ INTERAGENCY AGREEMENT]
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR DC Drehmel
Dennis C. Drehmel
Project Officer, CSD

PROFESSIONAL SCHOOL (medical, graduate, etc.) ___
(Supporting Agency)

(A) Dates of current project authorization: 11/72 - 5/74
(B) Annual level of effort: $133,000
(C) Multiple funding: None
(D) I. D. Number: 21 ADD 21

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY CSD, OR&M, EPA

TITLE OF PROJECT

Development of a Process for Producing Clean High-Temperature, Low-Btu Fuel Gas from Bituminous Coals

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Everett Gorin, Manager of Process Research, Research Division
Mr. George P. Curran, Research Division
Dr. Melvyn Pell, Research Division
Mr. Bedrich Pasek, Research Division

NAME AND ADDRESS OF INSTITUTION:

Consolidation Coal Company, Inc.
Library, Pennsylvania 15129

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to investigate the production of clean, low-Btu fuel gas for power generation by gasification/desulfurization of bituminous coals. The system under study involves removal of sulfur compounds and particulate from the product fuel gas at high temperature and 15 atmospheres pressure. The current bench-scale experimental program includes study of a fluidized-bed of half-calcined dolomite to remove H_2S from the product fuel gas, and of continuous regeneration of the partially-sulfided sorbent by reaction with steam and CO_2, so that the sorbent can be recycled and sulfur values can be recovered. Means of recovering elemental sulfur from the H_2S in the regenerator off-gases will also be considered. Operation of the gasification step will be studied.

The information from this study will be employed ultimately to demonstrate the gasification/desulfurization scheme on a larger scale.

This project was initiated in August 1970 and will be completed in September 1977.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D. B. Henschel
PROJECT OFFICER

PROFESSIONAL SCHOOL (medical, graduate, etc) (SUPPORTING AGENCY)

(A) 2/72 to 6/73
(B) $400,000
(D) 21ADD-22

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, OR&M, EPA

TITLE OF PROJECT:

Control of Pollutants in Fossil Fuel Conversion Treatment Processes

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr, E. M. MaGee
Project Director
Senior Research Associate

NAME AND ADDRESS OF INSTITUTION:

Esso Research and Engineering Company
P. O. Box 8
Linden, New Jersey 07036

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this contract is to perform a study on the environmental impact of fossil fuel conversion processes. Extensive surveys will be performed in order to identify all existing data for characterization of the environmental effects of converting a dirty fossil fuel (such as high sulfur coal) to a clean fossil fuel (such as low sulfur coal or synthetic natural gas).

Fossil fuels will be appropriately identified along with the concentrations of sulfur, nitrogen, trace metals and other pollutants in the fuel. The conversion processes will be identified; the process conditions for each step noted and evaluated; and the fate of each pollutant determined with respect to the various air, water and solid waste and product streams.

Evaluations of the process and process steps shall be made in order to identify optimized conditions and methods for control of all pollutants resulting in no or minimal environmental degradation.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________
PROJECT OFFICER

PROFESSIONAL SCHOOL (medical, graduate, etc.) (SUPPORTING AGENCY)

(A) 6/72 to 6/73
(B) $91K
(D) 21ADD-23

SI-SIE-78 (4) REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, OR&M, EPA

TITLE OF PROJECT: Fate of Hazardous Pollutants and Other Trace Constituents of Coal During Gasification

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

A. Attari Project Director Supervisor, Chemical Analysis Services	Jimmy Pau Associate Chemist Spectroscopy	E. J. Maeda Associate Chemist General Chemical Analysis

NAME AND ADDRESS OF INSTITUTION:
Institute of Gas Technology
3424 South State Street
Chicago, Illinois 60616

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this research is to perfect methods of measurement and to measure the concentrations of trace elements in the coal used and solid products obtained in a gasification pilot plant.

Successful collection of this information will provide a portion of that needed to establish the occurrence of each element in the plant effluents. When the occurrences are established, the need and extent of controls on the hazardous pollutants may be determined.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
X CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.): (Supporting Agency)

A) 5/72 to 11/72
B) $30K/6 mos.
C) 21ADD, 24

SI-SIE-79A; REV. 9-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, ORM, EPA

TITLE OF PROJECT: Fate of Sulfur in the Solvent Refined Coal Process

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. W. Bull
Project Manager

NAME AND ADDRESS OF INSTITUTION:
Pittsburgh & Midway Coal Mining Company
1600 Ten Main Center
Kansas City, Missouri 64105

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work is to:

A. Determine sulfur (and nitrogen) balances as a part of the present project activities. These balances will be obtained by analyzing the appropriate streams in the process to determine the weight fractions of the species present. Analytical procedures and techniques such as are necessary with respect to the precise determination of the component quantities present in the appropriate streams will be employed. This work will be performed on the P&M existing bench scale unit.

B. Develop improved methods and operational techniques during the above tasks so as to result in the true sulfur/nitrogen balances and identify the operating conditions and operational steps that have the major effect on their removal.

C. Develop an approach based upon the above information and process development which will result in an optimization of the process capability to maximize sulfur and nitrogen removal.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
X INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: Lloyd Lorenzi, Jr.
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.): (Supporting Agency) EPA

A) 7/72 to 7/73
B) $40K
C) 21ADD, 25

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control System Division, OR&M, EPA

TITLE OF PROJECT: Occurrence and Distribution of Potentially Volatile Trace Elements in Coal

---

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. N. F. Shimp
Chemist & Head
Section of Analytical Chemistry

NAME AND ADDRESS OF INSTITUTION: (Illinois State Geological Survey)
Board of Trustees of the
University of Illinois
Urbana, Illinois 61801

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

PURPOSE:

The purpose of this investigation is to determine the concentration of potentially volatile trace elements in whole and fractionated coals. In addition to determining amounts of trace elements in coal and coal fractions, the modes of occurrence and geographical distribution of these elements will be examined in a variety of U. S. coals. Detailed attention will be given to Illinois coals but some representative coals from eastern and western U. S. will be analyzed.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency)

A) 1/72 to 1/74
B) $74/Year
C) 21ADD, 72

SI-SIE-79A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, OR&M, EPA

TITLE OF PROJECT:

Evaluation of Pollution from Trace Elements in Coal

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

A. W. Deurbrouck
Research Supervisor, Process Technology

NAME AND ADDRESS OF INSTITUTION:

U. S. Bureau of Mines, Pittsburgh Energy Research Center
4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this task is to provide analytical services to determine the concentration levels in coal of potentially harmful pollutants that could be released to the environment from combustion of coal and to determine the benefits that may accrue by the removal of high density impurities associated with coal.

METHOD OF SUPPORT (CHECK ONE)

___ INTRAMURAL
___ CONTRACT
___ GRANT
_X_ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency)

(A) 7/72 to 6/73
(B) $60,000
(D) 21ADD-74

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, OR&M, EPA

TITLE OF PROJECT:

Desulfurization of Coal by Froth-Flotation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

A. W. Deurbrouck
Research Supervisor, Process Technology

NAME AND ADDRESS OF INSTITUTION: U. S. Bureau of Mines, Pittsburgh Energy Research Center
4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this task is to carry out tests in the Bureau's froth-flotation pilot plant to determine the best operating conditions for reducing the pyritic sulfur content of bituminous coals in the flotation process and to evaluate certain chemical reagents as pyrite depressants.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
_X_ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: PROJECT OFFICER

PROFESSIONAL SCHOOL (medical, graduate, etc.): (Supporting Agency)

(A) 7/72 to 6/73
(B) $56,000
(D) 21ADD-75

SI-SIE-79A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, OR&M, EPA

TITLE OF PROJECT:

Characteristics and Removal of Pyritic Sulfur from American Coals

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

A. W. Deurbrouck
Research Supervisor, Process Technology

NAME AND ADDRESS OF INSTITUTION: U.S. Bureau of Mines, Pittsburgh Energy Research Center
4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213

SUMMARY OF PROPOSED WORK – (200 words or less.) – in the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this task is to determine the sulfur release potential of coals from the principal coal beds of the United States and the amenability of these coals to sulfur reduction by conventional coal cleaning processes through float-sink evaluations.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
_X_ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR T K Jones
PROJECT OFFICER

PROFESSIONAL SCHOOL (medical, graduate, etc.) (SUPPORTING AGENCY)

(A) 7/72 to 6/73
(B) $130,000
(D) 21ADD-76

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, OR&M, EPA

TITLE OF PROJECT: Bench Scale Development and Evaluation of Chemical Processes for Removing Organic and Pyritic Sulfur from Fossil Fuels

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. R. Meyers
Systems Group of TRW, Inc.
Applied Technology Division

NAME AND ADDRESS OF INSTITUTION:
TRW, Inc.
TRW Systems Group
One Space Park
Redondo Beach, California 90271

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this contract is to perform the screening and bench scale experimentation necessary to continue development of TRW's proprietary chemical processes for removing pyritic and organic sulfur from coal.

This approach consists of two steps:

1. Extraction of pyritic sulfur by reaction with ferric chloride or sulfate
2. Extraction of organic sulfur by treatment with solvents such as ρ-cresol or nitrobenzene.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Lloyd Lorenzi, Jr.
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency)

A) 8/70 to 12/72
B) $200K/Year
C) 21ADD, 95

SI-SIE-78A; REV. 9-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY Control Systems Division, OR&M, EPA

TITLE OF PROJECT Pilot Plant Study of Conversion of Coal to Low Sulfur Fuel

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. D. K. Fleming

NAME AND ADDRESS OF INSTITUTION: Institute of Gas Technology
3424 South State Street
Chicago, Illinois 60616

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this study is to examine the degree of sulfur removal attainable by use of the concept of low-pressure hydrotreating of coal using an acceptor to capture the sulfur gases liberated. All data necessary for evaluating the applicability and economics of the proposed process will be obtained.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
X CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Lloyd Lorenzi, Jr.
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency) EPA

A) 6/72 to 8/73
B) $196K
C) 21ADD, AB

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT:
Continued Development of a Two-Stage Coal Combustion Process

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

1. J.A. Karnavas, Project Director & Vice-President
2. P.J. LaRosa, Principal Investigator & Director - R&D
3. W.A. Samuel, Staff Engineer 4. J. Emery - Engineer 5. K.R. Kyle, Engineer
6. R. McGarvey, Engineer 7. K. Riciardella, Engineer

NAME AND ADDRESS OF INSTITUTION:
Applied Technology Corporation
135 Delta Drive
Pittsburgh, Pennsylvania 15238

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Under EPA Contract No. CPA 70-146, Applied Technology Corporation has investigated the Two-Stage Coal Coal Combustion Process. In this process, coal and air are injected into molten iron to yield a carbon-monoxide-bearing offgas. Coal sulfur is not oxidized but is transferred to a slag floating on the iron. Thus, a low-sulfur offgas is produced for use as a fuel for power plant boilers.

Experimentation on a 2 megawatt rate equivalent combustor has shown that a boiler stack gas, containing less the 50 ppm sulfur dioxide is produced. Also total coal solubility results at injection depths of less than three feet and oxygen utilization is complete at air injection depths of five inches.

The current EPA study (Contract No. 68-02-0613) will advance process development by investigating (1) simultaneous decarburization and carburization of molten iron, (2) offgas particulate emissions, (3) refractory life, (4) sulfur recovery from liquid slag, (5) slag weathering, (6) retention of coal trace elements, (7) data review from the design point of view, and (8) utilization of the offgas in boilers. This program essentially completes work that can be accomplished with existing equipment (2 megawatt) and may enable the design of a 50-100 megawatt plant.

This project was begun in June 1970 and will continue until May 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Stanley J. Burns

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

A. 6/72 - 5/73
B. $620,146
C. not multiply-funded
D. 21 ADD - BA

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, OR&M, EPA

TITLE OF PROJECT: Study of Chemically Active Fluid Bed Gasifier for Reduction of Sulfur Oxide Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. K. F. Ridley, Manager
Fuels Division

NAME AND ADDRESS OF INSTITUTION:
Esso Petroleum Company
Esso Research Centre
Abingdon, Berkshire, U. K.

SUMMARY OF PROPOSED WORK – (200 words or less.) – in the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The overall objective of the Chemically Active Fluid Bed, CAFB, project is the development of an economical process for avoiding SO_2 pollution when burning heavy fuel oil for generation of power. The CAFB system is a regenerative process using a shallow fluid bed of lime to remove sulphur while gasifying the oil prior to combustion. The lime is regenerated, producing a concentrated (6-10%) stream of sulphur dioxide which can be recovered as acid or elemental sulphur.

The development strategy calls for six phases of activity culminating in demonstration of the process in a commercial boiler of approximately 150 megawatt capacity.

These six phases are as follows:

Phase II - Operation of continuous pilot plant to provide process data and knowhow for design of conversion of commercial unit.
- Development of conceptual design for conversion and economic evaluation of process viability.

Phase III - Full study design of proposed conversion.
- Additional laboratory and pilot plant studies to answer specific design questions.

Phase IV - Detail design of conversion.

Phase V - Boiler conversion and commissioning.

Phase VI - Boiler operation in normal duty while evaluating long term performance of CAFB gasifier.

Began June, 1970 expected completion is in 1976.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________
(Supporting Agency)

A) July 72 - Jan. 74
B) $383,000
C) $20,000 by Esso
D) 21ADD, BE

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, OR&M, EPA

TITLE OF PROJECT: Evaluation of the Fluidized Bed Combustion Process

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. D. H. Archer, Project Manager, Chemical Engineering Division (CED)

R. E. Brinza, CED	E. P. O'Neill, CED
J. R. Hamm, CED	C. Spangler, CED
D. L. Keairns, CED	E. J. Vidt, CED
W. F. Kittle, CED	W. C. Yang, CED
R. A. Newby, CED	W. L. Wright, Power Gen. Division

NAME AND ADDRESS OF INSTITUTION:

Westinghouse Research Laboratories
Beulah Road, Churchill Borough
Pittsburgh, Pennsylvania 15235

SUMMARY OF PROPOSED WORK – (200 words or less.) – in the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to develop the fluidized bed combustion concept to establish its viability as an economic means for controlling emissions that pollute the atmosphere from the combustion of coal and oil. The multi-pronged program is divided into the following five Tasks:

Task I:	Develop a fluidized bed boiler power plant. This includes the study of sulfur removal/sorbent regeneration/sulfur recovery, particulate removal, and effect of excess air on plant costs.
Task II:	Fluid bed boiler and power plant design evaluation.
Task III:	Preliminary design of a 10-30 MW pressurized fluid bed boiler development plant.
Task IV:	Assist in locating a utility which is willing to cooperate in the installation of a chemically active fluidized bed oil-burning boiler. An assessment of pressurized oil-burning boilers will also be done.
Task V:	Assist in all aspects of program development and evaluate work of other contractors.

The information from these studies will be used by the Supporting Agency to design and operate large-scale demonstrations of the system evolved.

THIS PROJECT WAS INITIATED IN JUNE, 1972 AND WILL BE COMPLETED IN DECEMBER, 1978.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
X CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR
P. P. Turner, Project Officer
PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency)

(A) 6-30-72 to 12-29-73
(B) $250,000
(D) 21ADB-09

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, OR&M, EPA

TITLE OF PROJECT:
Construction of High Temperature, Fluidized Bed Combustion-Limestone Regeneration Unit

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. R. C. Hoke, Engineering Associate

NAME AND ADDRESS OF INSTITUTION:
Esso Research & Engineering
Government Research Lab.
Linden, New Jersey

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of the CSD Development Program on pressurized fluidized-bed combustion of coal is to demonstrate this technology for coal combustion; the program is directed primarily at reducing SO_2, NO_x, and particulate emissions from utility power plants. The commercial capabilities of such a process should be demonstrated during the time period 1979-1981.

This continuous pilot plant unit is rated at 635 kW, and uses a regenerable fluidized bed of limestone in which coal is combusted. Steam raising coils are in the combustor portion of the fluidized bed. The unit will operate at pressures up to 10 atmospheres and provide continuous combustion and limestone regeneration data. This data will be used to design a larger unit of ~20 MW capacity.

CSD will assume the responsibility of weighing the benefits, the cost, the probability of success, possible alternatives, and determine how to proceed in the program.

It is felt that successfully operating a 20 MW combustor should demonstrate the commercial feasibility of pressurized fluidized-bed combustion of coal and initiate fuel industry support; however, tentative plans have been included for the demonstration of a 200 MW utility unit in the event funds were made available and it is felt by EPA at that point in time that the joint EPA-industry program should be continued further.

Began June 1970 expected completion (this task) in FY-74/75.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
X CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: R. C. Hoke
PROJECT OFFICER

PROFESSIONAL SCHOOL (medical, graduate, etc.): (SUPPORTING AGENCY)

(A) July 1972-May 1973 (10 months)
(B) $815,000
(C) Support in Equipment by Esso ~ $300,000
(D) 21ADB-10

81-SIE-78A; REV. 8-64

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY CSD, OR&M, EPA

TITLE OF PROJECT

Reduction of Atmospheric Pollution by the Application of Fluidized-Bed Combustion

Give names, deparments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Albert A. Jonke, Chemical Engineering Division
Mr. G. John Vogel, Chemical Engineering Division

NAME AND ADDRESS OF INSTITUTION:

Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to study the combustion of coal and residual fuel oil in a fluidized bed as a means for power generation with reduced emissions of air pollutants. Current emphasis is on a bench-scale experimental study of coal combustion in a fluidized bed of sorbent for removing SO_2 at furnace pressures up to 10 atmospheres. Regeneration of the sorbent, to recover sulfur values and to recover sorbent for recycle to the combustor, is also being studied at pressures up to 10 atmospheres. Reductions in emissions of NO_x, particulate and trace pollutants in the pressurized fluidized-bed combustor are also being characterized.

The information from this experimental study will be employed by the Supporting Agency in designing and operating larger experimental equipment to further investigate the system.

This project was initiated in June 1968 and will be completed in June 1975.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
X INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D. B. Henschel
PROJECT OFFICER

PROFESSIONAL SCHOOL (medical, graduate, etc) (SUPPORTING AGENCY)

(A) 6/72 to 6/73
(B) $375,000
(D) 21ADB-11

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT: Use of Refuse as Supplementary Fuel in Boiler Furnaces

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

G. Wayne Sutterfield, Refuse Commissioner, City of St. Louis, Mo.
David L. Klumb, Engineer, Union Electric Co., St. Louis, Mo.
Ed Wisely, Vice President, Horner & Shifrin, Inc., St. Louis, Mo.

NAME AND ADDRESS OF INSTITUTION:

City of St. Louis
City Hall
St. Louis, Missouri 63103

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Municipal refuse has been used as an auxiliary fuel in grate fired utility boilers since 1965. Subsequent studies indicated the technical and economic feasibility of retrofiting some existing U.S. utility boilers to suspension fire municipal refuse as an auxiliary low sulfur fuel.

Municipal refuse processing, storage, transport and utility boiler firing facilities have been constructed and operated under a demonstration grant to the City of St. Louis. Refuse is shredded, air classified (classification to be added to currently operating process), stored and later truck transported to an electrical utility plant where it is suspension fired to provide 15-20% of the boiler heat input. Studies of air pollution, boiler performance, boiler corrosion and refuse processing-firing costs are being conducted as part of the demonstration.

METHOD OF SUPPORT (CHECK ONE)

___ INTRAMURAL
___ CONTRACT
_X_ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

A. July 1970 to June 1974
B. Total planned Federal funding - $2,595,600
C. Total jointly funded by: Resource Recovery Division, Office of Solid Waste Management Programs, EPA - $1,428,600 and CSD, OR&M, EPA - $1,167,000
D. 21 APR - 06

SI-SIE-78A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Double Alkali Process Evaluation and Development

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dean Draemel, Engineer, RLB, CSD
J. H. Abbott, Section Chief, RLB, CSD
Dr. C. Lamantia, Chemical Engineer, Arthur D. Little, Inc.
Norman Kaplan, Chemical Engineer, DEB, CSD

NAME AND ADDRESS OF INSTITUTION: EPA, NERC, RTP, North Carolina
Arthur D. Little, Inc., Acorn Park, Cambridge, Mass.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Double Alkali process development studies will be carried out in a three phase program. Phase I will study the chemistry of both the scrubber and possible regeneration schemes. The bulk of this work will consist of in-house batch reactor experiments designed to study specific reactions and combinations of reactions. Phase II will involve the operation of a small bench scale scrubber system to study steady state operating modes, oxidation and solids characteristics. This work will be conducted in-house and on contract. Phase III will involve the operation of a pilot scale Double Alkali system to characterize feasibility, economics and operating behavior of the process. The third phase will be conducted on contract in conjunction with the first two phases.

This project was started in July, 1972 and will be completed by June, 1974.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
X CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR
Dean Draemel

PROFESSIONAL SCHOOL (medical, graduate, etc.) RLB, CSD

(A) Dates of current project authorization: 7/72 - 6/73
(B) Annual level of effort: $490,000
(C) Multiple funding: None
(D) I. D. Number: 21 ACX 38

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT:
Recovery of Sulfur Dioxide by Ammonia Scrubbing and Ammonium Bisulfate Regeneration

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

1. T.M. Kelso, TVA Project Manager
2. P.C. Williamson, TVA Principal Investigator

NAME AND ADDRESS OF INSTITUTION:
Tennessee Valley Authority
Office of Agricultural & Chemical Department
Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of the work is to operate a 4000 ACFM ammonia scrubber to remove SO_2 from a coal fired utility stack gas and to study systems for recovering SO_2 from the scrubber effluent. The recovery systems allow for considerable flexibility of scrubber solution regeneration operations (i.e. 100% evaporation, Partial evaporation, zero evaporation with NH_3 absorption in recycle scrubbing liquor, and slurry operation). These regeneration alternates will be evaluated through detailed engineering and preliminary economic calculations. The more promising alternates will be tested in the pilot plant to obtain data permiting scale up to demonstration size units.

The pilot plant is currently undergoing shakedown operation and collection of process data is scheduled to start in November 1972. The pilot plant is scheduled for intermittent operation ending in May or June 1974.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
_X_ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: Lindsay S. Griffin

PROFESSIONAL SCHOOL (medical, graduate, etc.): Project Officer, CSD
(Supporting Agency)

A. July/72 - June/1973
B. $336,000
C. Funded by EPA - $168,000} operation
   Funded by TVA - $168,000} & maintenance
   - $100,000} capital
D. 21ACX60

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE	SIE NO.
	AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Define Acidification - Stripping Operation on Laboratory Scale

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. James H. Turner, Chemical Engineer, CSD, RLB
J. H. Abbott, Section Chief, RLB, CSD

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

EPA is presently demonstrating the use of several sulfur dioxide removal schemes. Among contenders is ammonia scrubbing of flue gases using an ammonium hydroxide solution to scrub the gas, then using ammonium sulfite and ammonium bisulfate to strip sulfur dioxide from the scrubbing liquid. The resulting ammonium sulfate is decomposed to provide ammonia and ammonium bisulfate which are returned to the scrubbing process. At present the behavior of the stripping solution and release rates of SO_2 from the solution are not well known. This research project has the purpose of finding SO_2 release from the stripping solution at various values of temperature and pH, and to find SO_2 saturation values for solutions of ammonium bisulfate in saturated ammonium sulfate. The experimental plan has been to measure pH, density and composition of constant temperature solutions as increments of ammonium bisulfate were added to a saturated ammonium sulfate solution. Sulfur dioxide absorption and release from these solutions were found by concentration measurements as SO_2 or nitrogen sweep gas was bubbled into the solution.

This project was started in May 1972 and should be completed by January 1973.

METHOD OF SUPPORT (CHECK ONE)
☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR James H Turner
James H. Turner, Ph.D.

PROFESSIONAL SCHOOL (medical, graduate, etc.) RLB, CSD

(A) Dates of current project authorization: 5/72 - 6/73
(B) Annual level of effort: $15,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ACX 63

SI-SIE-78A; REV. 4-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT: Development of the Stone & Webster/Ionics Process for SO_2 Removal and Recovery

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

1. C. W. Fay, Wisconsin Electric Power Company
2. J. E. Lockwood, Stone & Webster
3. T. F. Seamans, Ionics

NAME AND ADDRESS OF INSTITUTION:

Wisconsin Electric Power Company
231 West Michigan
Milwaukee, Wisconsin 53201

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Stone & Webster/Ionics Process consists of 4 basic steps: (1) absorption of sulfur oxides from the waste stack gas by sodium hydroxide; (2) neutralization of the reacted sodium hydroxide solution (sodium sulfite and bisulfite) with electrolytically produced sulfuric acid to produce a sodium sulfate solution and to release and recover sulfur dioxide; (3) recycle of the sodium sulfate solution to an electrolytic cell system; and (4) electrolytic conversion of the sodium sulfate solution into sulfuric acid and sodium hydroxide for recycle.

The EPA and Wisconsin Electric Power Company program is as follows:

Phase I - Design, Installation and Operation of an integrated pilot plant; development of prototype scale electrolytic cell system; preliminary design of 75 Mw prototype system and development of detailed test programs and operating schedules. Approximately 15 months.

Based on evaluation of results from Phase I and continued favorable assessment of technical and economic feasibility, the program will continue as follows:

Phase II - Detailed design, procurement and installation of a 75 Mw prototype system. Approximately 16 months.

Phase III - Start-up and operation of the 75 Mw prototype system. Approximately 12 months.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
X CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Richard D. Stern

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

A. July 1972 - Oct. 1973 (Phase I of program)
B. $1,366,166 for 15-month Phase I effort
C. 50% EPA - 50% WEPCO, $685,083 each
D. 21ACX82

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT:

Development of Active Carbon SO_x Sorption and Sulfur Recovery Process

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

1. Dr. Frank Jervey Ball, Director, Charleston Research Center
2. Albert J. Repik, Supervisor, Activated Carbon Process Res., Charleston Research Center
3. Dr. Samuel Lee Torrence, Research Chemical Engineer, Charleston Research Center
4. James E. Davis, Research Chemical Engineer, Charleston Research Center
5. Dr. G. Nelson Brown, Jr., Research Chemical Engineer, Charleston Research Center

NAME AND ADDRESS OF INSTITUTION: Westvaco Corporation, 299 Park Avenue, New York, N.Y. 10017
Work performed at: Charleston Research Center, P.O. Box 5207, North Charleston, S.C. 29406

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this contractual effort is to determine technical feasibility of the power plant flue gas desulfurizing and elemental sulfur recovery process using activated carbon as SO_x sorbent. The process essentially consists of sulfur oxides sorption, sulfuric acid decomposition and active carbon regeneration stages. The reactive gas, hydrogen sulfide, needed for sulfuric acid decomposition, is generated internally in the active carbon regeneration stage. Elemental sulfur is the byproduct of this process.

Pilot plant investigations, now in ~~progress~~, are aimed to determine sets of principal operating parameters for all process stages which then will be integrated and run continuously for some time in a cyclic manner. This will demonstrate the technical feasibility of this process concept on a scale of some 20,000 scfh and render necessary technical and economic data for eventual design of a higher capacity flue gas desulfurizing pilot plant.

This pilot plant development work, solely funded by EPA, was started on January 13, 1971 and continued until December 1, 1971. Under modified contract arrangement this investigation was re-started for a period of ten (10) months (from September 29, 1972 to July 29, 1973) as an effort co-funded by EPA and the Contractor.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, (CSD)
(Supporting Agency)

A. 1. January 13, 1971 - November 30, 1971
2. September 29, 1972 - July 29, 1973

C. 1. \$347,000 } All EPA
2. \$200,000 } EPA
\$286,000 } Westvaco

D. 21ACX85

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT: Wet Scrubber Entrainment Study

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Seymour Calvert, APT Principal Investigator

NAME AND ADDRESS OF INSTITUTION:
APT, Inc.
P. O. Box 71
Riverside, California 92502

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Entrainment separation is an essential part of wet scrubber operation. EPA's Wet Scrubber System Study indicates that in many cases entrainment separation is the major source of problems in a scrubber system. Scrubber users complain of such operational problems as: unequal dust buildup, plugging, excessive water usage necessary to prevent plugging, drop reentrainment, low collection efficiency and high pressure drop. Since entrainment separators generally operate at lower superficial gas velocities than scrubbing, the entrainment separator is often larger than the scrubber itself. This research is aimed at: (a) solving the operational problems associated with entrainment separators and (b) reducing the size of high efficiency entrainment separators.

To carry out this research the contractor will:

1. Evaluate the status of present technology relating to entrainment separation.
2. Develop improved engineering equations and methods for entrainment separation selection and design.
3. Develop and test new entrainment separator designs which offer improved performance when compared with conventional entrainment separators.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer CSD
(Supporting Agency)

A. September 1972 to March 1974
B. $150,848
C. -
D. 21ACX-86

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research and Monitoring, EPA

TITLE OF PROJECT: Measurement Techniques for Control System Evaluation - Total Gas Volumetric Flow Rate

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

C. A. Flegal, Project Manager
B. J. Matthews
G. I. Gruber

NAME AND ADDRESS OF INSTITUTION:

TRW Systems, Inc.
One Space Park
Redondo Beach, California 90278

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This program is for the design, development, and demonstration of a technique or techniques to continuously measure the total volumetric gas flow rate in process streams. The developed devices must be able to contend with high turbulence and non-uniform velocity profiles in particulate laden gas streams (up to 15 grains per standard cubic foot). Emphasis will be placed on unattended long term (one year or more) use. Specific operational conditions to be encountered are: Temperature (0 to 400°F), Gas velocity (5 to 100 ft/sec.), Humidity (10% droplet laden), Corrosive gases (100 to 3000 ppm SO_2; 500 ppm NO_x), Particulate (0.02 to 15 grains/scf), Flow stream size (up to 40 ft. diameter), Flowrate (up to 10^6 scfm).

The development of such a device will greatly reduce the effort required to measure volumetric flow rate by manual pilot traversal. Additionally, the resulting data will be continuous rather than periodic as in the past. This continuous volumetric gas flow rate data will be combined with continuous pollutant monitoring and used to evaluate the efficiency of various control devices on full scale equipment, perform material and heat balance calculations, and evaluate the economics of pollutant removal. The program will start in October, 1972 and be completed in November, 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William B. Kuykendal

PROFESSIONAL SCHOOL (medical, graduate, etc.) William B. Kuykendal
Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 10/72 to 11/73
(B) Annual level of effort in dollars: $115,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ACX 91

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT:
Development of Aqueous Processes for Removing NO_x and SO_2 from Combustion Flue Gases

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.
Gilford A. Chappell

NAME AND ADDRESS OF INSTITUTION:
Government Research Laboratory
ESSO Research and Engineering Company
P.O. Box 8, Linden, N.J. 07036

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The investigator will conduct absorption studies on a simulated flue gas containing 0-300 ppm NO, 300-1000 ppm NO_2, 0-3000 ppm SO_2, 3% O_2, 8% H_2O, 12% CO_2 and the balance N_2 using Mg^{+2}, Na^+, Ca^{+2}, and NH_4^+ based slurries or solutions containing OH^-, SO_3^{-2}, SO_4^{-2}, NO_2^-, and NO_3^-. The effect of NO_2^-, NO_3^-, SO_3^{-2}, and SO_4^{-2} concentration upon the efficiency of NO_2 and SO_2 absorption will be studied. The rate of SO_4^{-2} formation and the need for an oxidation inhibitor, if any, will be determined. Column height, packing, and liquid and gas flow rates will be varied. Tests will be conducted in a column up to 6" in diameter and constructed in such a manner as to allow variations in column height up to 8 feet. Design of the column will be such that it can be operated as a packed column, turbulent bed column, spray column, or combinations thereof. The contract will be for 6 months and is expected to start in October 1972.

Upon completion of the above, the government has the option of extending the contract for an additional 12 months to continue absorption studies, perform regeneration studies, combine absorption and regeneration in simultaneous operations in laboratory sized equipment, and perform a thorough engineering and economic evaluation of the process.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Douglas A Kemnitz

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

A. Oct/12 - March/73 or March/74
B. $50K or $250K
C.
D. 21ACX93

SI-SIE-76A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT:

Instrumental Analyses for Wet Scrubbing Processes

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

E. A. Burns, Manager, Applied Chemistry Department
C. Flegal, Chemist, Applied Chemistry Department
A. Grunt, Chemist, Applied Chemistry Department

NAME AND ADDRESS OF INSTITUTION:

TRW Systems Group, One Space Park, Redondo Beach, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to develop and/or evaluate instrumental analysis methodology for the characterization of sulfur dioxide wet scrubbing processes. The techniques are needed to elucidate process reaction mechanisms, ascertaining scrubber efficiencies, and optimizing the process operations. Species of interest are calcium, magnesium, sodium, potassium, sulfite, sulfate, carbonate, chloride, pH, ionic strength, vanadium, cobalt, copper, and others. A mobile laboratory suitable for field use in characterization of scrubbing processes will be designed, equipped, and demonstrated utilizing sampling techniques, analytical instruments (such as x-ray fluorescence furfural bleaching procedure for sulfite, atomic absorption, gas chromatography, ultra-violet spectrometer) and analytical technology previously developed. This contractual effort was initiated September, 1971 and will be terminated on or about July, 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) Robert M. Statnick
Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 7/72 - 7/73
(B) Annual Level of Effort in Dollars: $150,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ACX - AB

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Petrographic Characterization of Chalks and Marls Related to the Pore Structure of Their Calcined Products

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. R. D. Harvey, Industrial Minerals Section, Geologist

NAME AND ADDRESS OF INSTITUTION: Illinois State Geological Survey
University of Illinois
Urbana, Illinois 61801

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The project was divided into three consecutive stages. The initial stage was a survey of the geologic literature for occurrences of calcite-rich marls and chalks. Deposits of marls are known to occur mainly in Michigan, Wisconsin, Minnesota, and Texas. Chalk deposits mainly occur in a band across portions of Kansas and Nebraska, and near Austin, Texas. The geologic literature of the other states was checked for description of deposits of poorly lithified and fine grained carbonate rocks, such as oolitic sands, etc.

The second stage of the study consisted of a geologic field examination and sampling of selected occurrences and petrographic studies of samples. Based on the literature survey approximately five to seven occurrences of marls and chalks were selected for field examination and sampling. The major known occurrences of these rocks were included in the sampling program, and an effort was made to examine and collect samples of a wide variety of marls and chalk. Dependent on the variation of the composition of the rocks in the deposits (outcroppings or quarries) 3 to 6 samples at each locality were taken for detailed petrographic studies in the laboratory. A total of 37 samples were examined and analyzed.

The last stage will consist of the study of the pore structure of the calcined samples. The pore volume, mean pore diameter and B.E.T. surface area data for the samples will be obtained by a subcontract arrangement with a commercial laboratory. This project was started in June, 1971 and should be completed in March, 1973

METHOD OF SUPPORT (CHECK ONE)
☐ INTRAMURAL
☒ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR DC Drehmel
Dennis C. Drehmel
Project Officer, CSD

PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency)

(A) Dates of current project authorization: 6/71 - 3/73
(B) Annual level of effort in dollars: $ 21,000
(C) Multiple Funding: None
(D) I. D. Number: ~~Not identified in~~ ROAP - EPA Contract No. 68-02-0212

21 ACY 17

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT: Optimization of a Lime/Limestone Wet Scrubbing Process for SO_2 and Particulate Removal in a Marble Bed Scrubber

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

*Mr. M. R. Gogineni, Senior Project Engineer, Air Pollution Control Systems Development

Dr. W. C. Taylor, Supervisor, Chemical Research

Mr. K. Malki, Project Engineer, Air Pollution Control Systems Development

*Principal Investigator.

NAME AND ADDRESS OF INSTITUTION:

Combustion Engineering, Inc.
Combustion Division, Kreisinger Development Laboratory
1000 Prospect Hill Road, Windsor, Connecticut 06095

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this contract is to conduct research and development on small pilot scale and large pilot scale (prototype) versions of the Combustion Engineering (C-E) lime/limestone wet scrubbing process, in order to accelerate its commercial development.

The scope of work includes the following: (a) C-E will provide technical information developed in previous and current bench scale, small and large pilot plant, and full scale field tests of the C-E lime/limestone wet scrubbing process; (b) C-E will assist in engineering analysis of the above information and in the development and evaluation of a test program leading to selection of a set of optimum operating conditions for the field units; (c) C-E will conduct a series of soluble system tests, using sodium carbonate, on the C-E prototype unit to determine the unit's maximum mass transfer capability; (d) C-E will conduct a series of pilot plant tests, primarily using boiler calcined limestone-flyash, to correlate with the field unit and ultimately define a range of satisfactory operating conditions for the field units.

This project began in June 1971; testing was completed in July 1972. The final report is expected to be issued November 1972.

METHOD OF SUPPORT (CHECK ONE)

____ INTRAMURAL
_X_ CONTRACT
____ GRANT
____ INTERAGENCY AGREEMENT
____ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Julian W Jones

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

A. June 1971 to Nov. 1972
B. $248,617
C. EPA Funding Only
D. 21ACY20

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT: Prototype Study of Limestone Scrubbing for SO_2-Dust Removal Systems

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

*Mr. I. A. Raben, Air Quality Group Manager, Scientific Development Dept.
Dr. M. Epstein, Scientific Development Dept.
Mr. L. Sybert, Scientific Development Dept.

*Program Manager

NAME AND ADDRESS OF INSTITUTION:

Bechtel Corporation
Fifty Beale Street
San Francisco, California 94119

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this contract are: to complete the detailed design of a highly versatile, prototype limestone wet scrubbing facility; to procure major equipment; to design and conduct a two-year test program to evaluate limestone wet scrubbing processes; and to analyze, evaluate, and report the test results.

The scope of work includes the following:

(a) Conduct preliminary engineering, equipment evaluation, and site selection for the facility.

(b) Conduct the detailed design and the selection, procurement, and delivery of major equipment, including 3 different scrubber types. Also assist in equipment installation.

(c) Plan and design a two-year test program for the facility, including development of process models and design of screening experiments; development of a data handling and analysis manual; design of primary experiments; and preparation of test program and operating manuals.

(d) Conduct the test program and evaluation of the data. Emphasis will be placed on design information and economic data for scale up. Operating and waste disposal problems will be evaluated; reliability will be demonstrated over an extended operating period. A comprehensive process and mechanical design report will be issued.

The test program is now being conducted at TVA's Shawnee Steam Plant near Paducah, Kentucky. This project began in June 1968, and is expected to be complete by June 1974.

METHOD OF SUPPORT (CHECK ONE)

___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Frank Princiotta

PROFESSIONAL SCHOOL (medical, graduate, etc.) PROJECT OFFICER, CSD
(Supporting Agency)

A. April 1972 to June 1974
B. $1,186,274
C. EPA Funding Only
D. 21ACY32

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT: Prototype Scale Evaluation - Limestone Wet Scrubbing Process

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

*Mr. H. W. Elder, Division of Chemical Development
Mr. P. E. Stone, Division of Chemical Development
Mr. J. Reese, Division of Power Production

*Program Manager

NAME AND ADDRESS OF INSTITUTION:
Tennessee Valley Authority
Division of Chemical Development
Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this interagency agreement are: to construct the prototype limestone wet scrubbing test facility at the Shawnee Steam Plant; provide operating, chemical laboratory, and technical personnel and materials for a two-year test program; and restore the site at completion of the program.

The statement of work includes the following:

(a) TVA will construct EPA's prototype limestone wet scrubbing test facility at Boiler No. 10 of the Shawnee Steam Plant; according to Bechtel - furnished design and engineering, and using major equipment, including 3 different scrubbers, purchased by Bechtel.. TVA will furnish bulk construction materials and specific items not supplied by Bechtel.

(b) TVA will provide manpower for start-up and operation of the test facility during thw two-year test program designed by Bechtel. TVA will supply the required chemical laboratory and maintenance personnel for the program. In addition, TVA will participate on the technical team, headed by Bechtel, directing the test program. At the end of the project, TVA will restore the site.

The test program is now being conducted at TVA's Shawnee Steam Plant near Paducah, Kentucky. The project began in April 1970, and is estimated to be complete August 1974.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
_X_ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: Frank Princiotta

PROFESSIONAL SCHOOL (medical, graduate, etc.): PROJECT OFFICER, CSD
(Supporting Agency)

A. July 1972 to June 1973 (FY73)
B. $2,765,000 in FY 73
C. EPA Funding Only (Joint Funding provided by TVA)
D. ~~21AGY55~~ 21 AGY - 33

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research and Monitoring, EPA

TITLE OF PROJECT: Wet-Collected Limestone-Modified Fly Ash Characterization and the Evaluation of Potentially Toxic Hazards

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. J. Rossoff , Office of Corporate Planning, Program Manager
Dr. R. C. Rossi, Section Manager, Ceramics Section/Materials Sciences Laboratory, Principal Investigator

NAME AND ADDRESS OF INSTITUTION: The Aerospace Corporation
El Segundo, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This research project will provide a detailed characterization of wet-collected limestone-modified fly ash from limestone scrubbing processes for SO_2 control of combustion stack gas sources and an evaluation of the potentially toxic hazards posed in the subsequent handling, disposal, or utilization of the ash. The need for this study is based on the results of previous projects which indicated the following: (1) dry-collected limestone-modified fly ash analyses identified the presence of heavy metal trace elements that could pose a toxic hazard, depending upon their chemical/physical state, (2) wet-collected limestone-modified ash is expected to contain even greater quantities of heavy metal elements due to wet scrubbing of the ash and flue gases, posing hazards in its disposal or utilization, and (3) water-soluble elements pose an additional health hazard in the disposal of waste waters because of the large quantities of scrubbing water required and the possibility of contamination of surface waters and sub-surface water tables.

The project will develop information in the following areas: chemical characterization of solid and liquid phases with emphasis on trace and toxic elements; toxic properties determination and effects on humans, animals and plants; physical properties such as strength, pozzolanic reaction, drainability, corrosiveness, etc.; potential for detoxification; identification of safe disposal methods and assessment of their costs.

The project should start in October 1972 and be completed in September, 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_x_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) L. H. Garcia
Project Officer, CSD
(Supporting Agency)

(a) Dates of current project authorization: August, 1972 - August, 1973
(b) Annual level of effort: $140,000
(c) Multiple funding: None
(d) I. D. Number: 21 ACY 35

SI-SIE-7BA; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Design, Manufacture & Installation of Pilot Scale SO_2 Scrubber

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.
Robert E. Opferkuch, Chemical Engineer

NAME AND ADDRESS OF INSTITUTION:
Monsanto Research Corporation, Dayton, Ohio

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A model limestone scrubber of maximum flexibility and utility has been designed, fabricated and installed at the NERC-RTP facility for the purpose of conducting SO_2 scrubbing studies in support of EPA's large prototype demonstration at TVA's Shawnee Power Plant. The scrubber has the capability of simulating three types of scrubbers: TCA, Venturi or Spray tower at throughputs of 100 - 800 cfm. The layout of the model includes each of the essential components of the complete closed-loop scrubbing system. A 9-inch diameter tower contacts flue gas with the limestone slurry and feeds it to a 350 gal. hold tank, where limestone reactant is added. A purge stream is fed to a rotary vacuum filter for removal of the reaction product. A mist eliminator mounted on the absorption tower removes entrained liquid from the clean gas. Instrumentation and controls are provided for accurate metering of all process streams. Project started February, 1972, and ended July, 1972.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Robert H Borgwardt
R. H. Borgwardt
PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 2/72 - 7/72
(B) Annual level of effort: $150,000
(C) Multiple funding: None
(D) I. D. Number: 21 ACY 37

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Investigation of Methods for Control of Scaling in Limestone Scrubbing Processes

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Joan B. Berkowitz, Project Director
Douglas Shooter
Dr. John Ketteringham

NAME AND ADDRESS OF INSTITUTION:

Arthur D. Little, Inc., Acorn Park, Cambridge, Mass.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

On the basis of work carried out during 1971-72 under EPA Contract No. 68-02-0215 to define the fundamental factors responsible for scaling and fouling in limestone wet scrubbers for SO_2 abatement, several potential methods for control of scale have been developed. These methods will be evaluated under the present study by further bench scale experimentation prior to demonstration in pilot scale equipment. The evaluation will proceed along three main approaches: (1) addition of scale inhibiting compounds, including seeds, polyphosphates, polyacrylates, and commercial formulations known to be effective in other chemical processes where scaling is a problem; (2) promoting or inhibiting oxidation of sulfite, in order to control the amount of potential scale-forming compounds in the scrubber liquor; and (3) control of process operating conditions to limit scale forming reactions. The third approach will involve the assimilation of thermodynamic and kinetic information on the totality of reactions in the scrubber loop to formulate a mathematical model of the integrated process that can be used to identify safe modes of operation with minimal scaling potential for different scrubber types. Due to the importance of calcium sulfite oxidation to the general scaling problem, a supplementary study will be made to define the mechanism of oxidation and the rates of critical steps. Project started August, 1971, to be completed November, 1973.

METHOD OF SUPPORT (CHECK ONE)

___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: Robert H Borgwardt
R. H. Borgwardt
PROFESSIONAL SCHOOL (medical, graduate, etc.): Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 8/71 - 11/73
(B) Annual level of effort: $150,000
(C) Multiple-funding: None
(D) I. D. Number: 21 ACY 38

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Limestone Characterization - Physical Properties, Reactivities and Product Characteristics

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dean C. Draemel, Engineer, RLB, CSD
R. H. Borgwardt, Chemical Engineer, RLB, CSD
J. H. Abbott, Section Chief, RLB, CSD

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The crystallization of $CaSO_3$ and $CaSO_4$ from wet limestone scrubber effluent solutions will be studied. The scrubber effluent hold tank will be modeled as a crystallizer. Various process parameters will be studied such as limestone type, particle size, solids concentration, hold time and temperature. Plug flow, stirred, and baffled stirred hold tank configurations will be studied. An understanding and quantification of hold tank crystallization kinetics could be used for scrubber system design and optimization. Oxidation and reaction in the various hold tank configurations will be studied in detail.

This project was started in July, 1972 and will be completed by July, 1973.

METHOD OF SUPPORT (CHECK ONE)
☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Dean C Draemel
Dean C. Draemel

PROFESSIONAL SCHOOL (medical, graduate, etc.) RLB, CSD

(A) Dates of current project authorization: 7/72 -6/73
(B) Annual level of effort: \$20,000
(C) Multiple funding: None
(D) I. D. Number: 21 ACY 39

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT:

Study of Full Scale Limestone Scrubbing (Engineering Science, Inc. CPA 70-141)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

1. M. Dean High, Manager, Air Pollution Control Department, Engineering Science, Inc.
2. Terry LiPuma, Test Engineer, Engineering Science, Inc.

NAME AND ADDRESS OF INSTITUTION:
Engineering Science, Inc.
600 New Hampshire Ave., N.W., Suite 888
Washington, D.C. 20037

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to evaluate the feasibility including efficiency of operation, economics, and reliability of an open loop limestone wet scrubbing process using seawater as the slurrying liquid. The testing will be carried out in a pair of impingement-inspiration-entrainment scrubbers ("Dustraxtors" - trade name of manufacturer, Zurn Industries,Inc.) installed at a new 37 megawatt steam-electric generating facility located on Stock Island, adjacent to Key West, Florida.

The power plant and scrubber facility is owned and operated by the Utility Board of the City of Key West, Florida, however, the scrubber installation was partially funded by EPA under a demonstration grant (#70-1102D). The power plant will burn #6 Bunker C oil containing a maximum of 2.75 % sulfur and the alkali used in the scrubber will be a slurry of locally available coral marl (95 + % calcium carbonate).

The test program will consists of (1) air-salt water tests (2) break-in tests (3) screening and primary tests (4) miscellaneous optimization tests and (5) extended operation testing. Efficiency of operation will be characterized as a function of the following named five independent variables, (1) limestone stoichiometry (2) scrubber system pressure drop (3) flue gas flow rate (4) slurry particle size and (5) slurry concentration in a statistically designed test matrix. Reliability of operation will be tested mainly in the extended operation testing.

The project was started (full scale test contract) June 30, 1970 and is anticipated to be complete by March 1974.

METHOD OF SUPPORT (CHECK ONE)*

___ INTRAMURAL
_X_ CONTRACT
_X_ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

* Both contract & grant are involved

SIGNATURE OF PRINCIPAL INVESTIGATOR Norman Kaplan
PROJECT OFFICER, CSD

PROFESSIONAL SCHOOL (medical, graduate, etc.)
(Supporting Agency)

A. June/1970 - March/1974
B. $100,000/yr. (For test period of 20-months)
C. N/A
D. 21AF0-04

SI-SIE-76A; REV. 6-14

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Control Systems Division, OR&M, EPA

TITLE OF PROJECT: SO_2 Recovery/Conversion to Elemental Sulfur

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Prime Contractor - Northern Indiana Public Service Company - Earl L. Mann, Manager of Plant Engineering
Sub-Contractor - Wellman-Power Gas - R. Taylor, Program Manager
Allied Chemical - W. D. Hunter, Manager, Technology Development Special Projects

NAME AND ADDRESS OF INSTITUTION:
Northern Indiana Public Service Company
P. O. Box 318-A
Michigan City, Indiana 46360

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

EPA and Northern Indiana Public Service Co. (NIPSCO) are to demonstrate a system - combining the Wellman-Lord SO_2 recovery process and Allied Chemical's SO_2 reduction-to-sulfur process - at NIPSCO's coal-fired 115-MW Unit No. 11 at the D. H. Mitchell Station in Gary, Indiana.

The Wellman-Lord process, a cyclic absorption-desorption process for producing concentrated SO_2 from such waste gas streams as power plant flue gas and smelter offgases, is adaptable for use on gas streams containing both low and relatively high SO_2 concentrations. Although its product, concentrated SO_2, has very limited markets, it can be used in sulfuric acid manufacture or reduced to elemental sulfur: for this demonstration, elemental sulfur, the more desirable of the two potential byproducts, will be recovered.

The absorbent is a solution of sodium sulfite. In the absorption cycle, the sulfite ion reacts with SO_2 to form bisulfite: $SO_3 + SO_2 + H_2O = 2HSO_3$. In the desorption cycle, the reaction is reversed by applying heat to release SO_2 and regenerate sulfite: $2HSO_3 = SO_3 + H_2O + SO_2$.

The prototype of the sulfur reduction process is a 500-ton-per-day sulfur plant designed, constructed, and operated by Allied Chemical Co. at Sudbury, Ontario. There the sulfur reduction plant operates on about a 12-percent SO_2 stream from a nickel roaster; in this application the sulfur reduction plant will be operating on an almost pure SO_2 stream.

The project started in July, 1972 and will be completed in August, 1975.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
X CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Norman Plaks
Norman Plaks
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency)

A. Authorization dates July, 1972 - August, 1975
B. Funding level $8,400,000 co-funded by EPA and Northern Indiana Public Service Company
C. ROAP/ID No. 21AFI

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, OR&M, EPA

TITLE OF PROJECT: Cat-Ox Process Demonstration

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Illinois Power Co. Project Manager: E. E. Connon

NAME AND ADDRESS OF INSTITUTION:

Illinois Power Company
500 South 27th Street
Decatur, Illinois 62525

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of the Cat-Ox Demonstration is to design, construct, start-up, operate, and evaluate the Monsanto Cat-Ox system. This process is intended to provide stack gas desulfurization capability for the utility industry. Operation requires passing the flue gases through a high-efficiency (∿99.6%) electrostatic precipitator and then, heating them to at least 850°F, after which they are passed through a catalyst bed which converts the majority of the SO_2 to SO_3. After this, the temperature of the gases is lowered and they proceed on to an absorption tower where the SO_3 combines with water vapor to form sulfuric acid which is collected as a by-product. The cleaned gases pass through a sulfuric acid mist eliminator and exit the stack. Overall SO_x removal efficiency is about 85% (and deashing is essentially complete). EPA is presently involved in a jointly funded contract with Illinois Power Co. (IP) to install a Cat-Ox unit on a 100 MW boiler at IP's Wood River Station. Construction was completed at the end of July of this year. After debugging and meeting of performance guarantees, the system will be operated for at least one year, during which time EPA will conduct an extensive test program and analysis effort so as to adequately determine the overall technical and economic feasibility of the system. The contract for this project was signed June, 1970 and it is anticipated that all project phases will be completed by April, 1974.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: GSHaselberger
G. S. Haselberger
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.): (Supporting Agency)

A. Program duration: 6/70-4/74
B & C. Total program funding: EPA, \$4,660,000; Illinois Power, \$3,870,000
D. I.D. No.: 21ACZ

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT: Conceptual Design and Economic Evaluation of Processes for Reduction of Sulfur Oxides Emissions (MgO Scrubbing/Regeneration)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Gerald G. McGlamery, Project Manager, Design Branch

NAME AND ADDRESS OF INSTITUTION:

Tennessee Valley Authority
Division of Chemical Development
Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to evaluate objectively and realistically the merits of different methods under consideration for sulfur oxides control, with a common and uniform basis used for comparison. The method currently under study involves the use of magnesium oxide slurry scrubbing. This study will include: (1) literature surveys; (2) direct contact with workers in the field to supplement literature information; (3) specific studies by specialists in power plant design, chemical plant design, and power plant operation; (4) market surveys; (5) quotation from vendors and fabrications on major equipment items; and (6) investment and operating cost estimates.

This project was initiated in June 1970 and is anticipated being complete in November 1972.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
_X_ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer CSD
(Supporting Agency)

A. July 1970 - May 1972
B. $156,000
C. N/A
D. 21ADA02

SI-SIE-78A; REV. 8-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT: Three Party Agreement for the New England SO_2 Control Project

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

George R. Koehler, Project Director, Chemical Construction Corp.
James A. Burns, Project Engineer, Boston Edison Co.

NAME AND ADDRESS OF INSTITUTION:

Chemical Construction Corporation
320 Park Avenue
New York, New York 10022

Boston Edison Co.
1165 Massachusetts Ave.
Dorchester, Mass. 02125

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this project is the adequate demonstration by 1974 of the magnesium oxide process in a form suitable for controlling particulate and SO_x emissions from new and existing oil and coal-fired utility combustion sources. By means of an EPA-Boston Edison cost shared contract, a commercial scale system employing the magnesium scrubbing process has been designed, engineered and constructed. Scrubbing operations are located at Boston Edison's Mystic Station in Everett, Mass., while regeneration of the magnesium oxide is accomplished at Essex Chemicals' sulfuric acid plant in Rumford, R. I. The scrubbing and regeneration plants are in the process of being started up and will be operated for a two-year period in order to permit confident assessment of the performance and operating factors associated with commercial application of the process.

This project was initiated in June 1970 and is anticipated being complete in April 1974.

METHOD OF SUPPORT (CHECK ONE)

___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer CSD
(Supporting Agency)

A. June 1970 - December 1973
B. N/A
C. \$2.5 million support each by Boston Edison and EPA (total contract period)
D. 21ADA04

SI-SIE-75A; REV. 8-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, OR&M, EPA

TITLE OF PROJECT: Air Pollution Caused by Copper Metallurgy Assemblies in Bor

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Principal Investigator, Institute for Copper, D. Stankovic

NAME AND ADDRESS OF INSTITUTION: Institute for Copper
Bor, Yugoslavia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Due to the fact that copper smelting practice in the United States exposes a significant segment of the population to a multiplicity of pollutants whose effects have not been determined, current efforts are underway to provide for evaluation of emissions from such plants. To this end, EPA has entered into a PL-480 agreement (excess foreign currency program) with the Institute for Copper in Bor, Yugoslavia to provide for a 3-year program of investigation (begun May 1971) to be carried out on the Bor copper smelter, an American engineered installation, which is the largest such smelter in all Europe. Specific objectives are:

- Characterization of all air pollutant emissions from this type of smelter, both qualitatively and quantitatively.

- Relating air pollutant emissions to the feed and to feed changes so that data will apply to other smelters.

- Relating air pollutant emissions to operational changes (changes in smelter configuration) so that data will apply to other smelters.

- Determination of the effects of controlling SO_2 and particulates upon the emission of all other pollutants, especially of the "Hazardous" heavy metals.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
X OTHER - PL-480 Agreement

SIGNATURE OF PRINCIPAL INVESTIGATOR G. S. Haselberger
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency)

A. Program duration: 5/71-5/74
B. Total program funding: EPA, 8,900,000 dinars ≐ $525,000 (current exchange rates)
C. -
D. 21ADC

SI-SIE-70A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, OR&M, EPA

TITLE OF PROJECT:

Development of Models to Minimize the Emission of Fume and Particulates from the Non-Ferrous Smelting Industries

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Not designated as yet

NAME AND ADDRESS OF INSTITUTION:

Institute for Copper, Bor, Yugoslavia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

EPA currently has two PL-480 (excess foreign currency) programs underway which are directed at the characterization of emissions from the non-ferrous smelting industries. In particular, extensive testing is now being carried out at a copper smelter complex in Bor, Yugoslavia, and a lead and zinc smelter complex in Trepca, Yugoslavia under the direction of two Yugoslavian agencies, the Institute for Copper, and the Lead and Zinc Institute. Because of the success of these programs, it is being proposed that a new follow-on study be initiated which would make use of data from this on-going work to aid in the development of process models. The specific objectives of the proposed new work are listed below:

A. Develop theoretical models to describe the formation of particulates and fume from copper and lead smelting. In particular:

   i. The copper industry - reverberatory furnace and converters.
   ii. The lead industry - blast furnace.

B. Verify the models with analytical and measurements data from actual pyrometallurgical processes.

C. Employ the models to determine which parameters will:

   i. Minimize the emission of particulate and fume.
   ii. Cause small particle agglomeration (thus, facilitating particulate removal).
   iii. Maintain production while minimizing these emissions.

D. Verify on actual processes that the emissions of particulate and fume can be minimized as indicated by the models.

___ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
X OTHER PL-480 Agreement

SIGNATURE OF PRINCIPAL INVESTIGATOR G. S. Haselberger
PROJECT OFFICER
(SUPPORTING AGENCY)

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 3 years from date of signing (awaiting signing)
(B) EPA, 8,600,000 dinars = $506,000 (current exchange rates)
(C) –
(D) 21ADC

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, OR&M, EPA

TITLE OF PROJECT:

Emission and Immission of Air Contaminants During Metallurgical Treatment of Lead, Zinc, Pyrites Concentrates, and Pyrrhotine to Final Products

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Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

S. Vukotic, Principal Investigator, Lead and Zinc Institute

NAME AND ADDRESS OF INSTITUTION:

Lead and Zinc Institute, Kosovska Mitrovica, Yugoslavia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Due to the fact that lead and zinc smelting practice in the United States exposes a significant segment of the population to a multiplicity of pollutants whose effects have not been determined, current efforts are underway to provide for evaluation of emissions from such plants. To this end, EPA has entered in a PL-480 agreement (excess foreign currency program) with the Lead and Zinc Institute in Kosovska Mitrovica, Yugoslavia to provide for a 3 year program of investigation (begun June 1971) to be carried out at the lead and zinc smelter complex at Trepca. Specific objectives are:

- Characterization of all air pollutant emissions from these types of smelters, both qualitatively and quantitatively.
- Relating air pollutant emissions to the feed and to feed changes so that data will apply to other smelters.
- Relating air pollutant emissions to operational changes (changes in smelter configuration) so that data will apply to other smelters.
- Determination of the effects of controlling SO_2 and particulates upon the emission of all other pollutants, especially of the "hazardous" heavy metals.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
X OTHER PL-480 Agreement

SIGNATURE OF PRINCIPAL INVESTIGATOR R V Hendriks
Robert V. Hendriks
PROJECT OFFICER

PROFESSIONAL SCHOOL (medical, graduate, etc.) (SUPPORTING AGENCY)

(A) 6/71 - 6/74
(B) EPA, 10,740,000 dinars = $632,000 (current exchange rates)
(C) -
(D) 21ADC

SI-SIE-79A; REV. 9-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, OR&M, EPA

TITLE OF PROJECT:
High Temperature Gas Purification in Non-Ferrous Metallurgy

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Not designated as yet

NAME AND ADDRESS OF INSTITUTION:
Self Managing Organization of United Labor for Development and Research, TREPCA
Kosovska Mitrovica, Yugoslavia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

EPA currently has two PL-480 (excess foreign currency) programs underway in Yugoslavia which are directed at the characterization of emissions from the copper, lead, and zinc industries. As a follow-on effort to the work presently being conducted, it is proposed that a program be established to develop improved techniques for high temperature effluent gas particulate removal in the non-ferrous smelting industry. Specific objectives will be to lower capital investment and energy supply costs and improve particulate removal efficiency of gas cleaning equipment to obtain a higher quality smelter off-gas for application in sulfur and sulfuric acid production. Priority will be given to investigations of electrostatic precipitators, dust recovery chambers, cyclones, granular bed filters, and cloth, metallic, and ceramic fiber filters. Tasks to be carried out to achieve these objectives would include:

- Examination of existing technology for high temperature gas cleaning metallurgical process effluent gases.
- Examination of basic factors influencing collection equipment operations.
- Analysis of conceptual techniques for high-temperature gas cleaning.
- Testing of individual projects on laboratory or pilot scale basis.
- Formulation of full-scale conceptual techniques for high-temperature cleaning of metallurgical effluent gases.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
_X_ OTHER PL-480 Agreement

SIGNATURE OF PRINCIPAL INVESTIGATOR R V Hendriks
Robert V.Hendriks
PROJECT OFFICER

PROFESSIONAL SCHOOL (medical, graduate, etc.) (SUPPORTING AGENCY)

(A) 3 years from date of signing (awaiting signing)
(B) EPA, 8,900,000 dinars = $524,000 (current exchange rates)
(C) -
(D) 21 ADC

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT:
Pyrolysis-Combustion, Air Pollution Control for the Kraft Recovery Process

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

1. D.L. Brink, Project Director, University of California, Professor of Forestry
2. J.F. Thomas, Project Director, University of California, Professor of Sanitary Engineering

NAME AND ADDRESS OF INSTITUTION: Regents of the University of California
c/o Campus Research Office
118 California Hall - Berkeley, California 94720

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A major source of particulate and malodorous gaseous emissions from the paper industry is associated with the recovery operation in the Kraft process. The objective of this project is to establish the technical and economic feasibility of pyrolysis-combustion for the recovery of heat and inorganic pulping chemicals from Kraft black liquor, with elimination of particulate and objectionable gaseous emissions. The scope of the activity includes operation of the contractor's experimental pyrolysis-combustion unit, sample collections and analysis of feed and products, reduction of data, design of a pilot plant, and economic evaluation of the pyrolysis-combustion process.

The work is being performed at the Forests Products Laboratory, 1301 South 46th Street, Richmond, California.

This project was started in July, 1971 and was planned to be completed by January, 1973. A tentative extension of project duration by six months is being considered as of September, 1972.

METHOD OF SUPPORT (CHECK ONE)
☐ INTRAMURAL
☒ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR
Project Officer, CSD

PROFESSIONAL SCHOOL (medical, graduate, etc.)
(Supporting Agency)

A. July/71 - Jan/73
B. $215,135.00
C. ---
D. 21ADC09

SI-SIE-7SA; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT: Hydrogen Sulfide Production from Copper Ore Concentrate by Steam Oxidation and/or Acid Treatment

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

1. Dr. Charles A. Rohrmann, Division Staff Engineer
2. Dr. Donald W. Bolme, Senior Development Engineer
3. Eugene A. Coppinger, Senior Research Engineer
4. John L. Swanson, Senior Research Scientist
5. Dr. Harold T. Fullam, Research Associate
6. F.P. Roberts, Research Associate

NAME AND ADDRESS OF INSTITUTION:
Battelle-Pacific Northwest Laboratories
Battelle Boulevard
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this contractual effort is to conduct laboratory investigations on technical and economic feasibility of producing hydrogen sulfide gas at a copper smelter site by methods involving copper concentrate reactions with steam or by treating copper ore concentrate with hydrochloric acid.

If found feasible, the above means will locally provide hydrogen sulfide gas that could be reacted with sulfur oxides evolving elsewhere in the smelter and thus preventing sulfur oxides emission into atmosphere.

The study, under cost sharing arrangement with Phelps Dodge Corporation, a copper producer, was started on July 12, 1971 and will expire about the end of 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
X CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

A. July/71 - 11/73
B. $75,000 - EPA
$25,000 - Phelps Dodge Corporation
C. $150,000- EPA
$50,000 - Phelps Dodge Corporation
D. 21ADC56

SI-SIE-70A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, OR&M, EPA

TITLE OF PROJECT: Smokeless Coke Charging Demonstration

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Ernest Kirkendall
Vice-President Technology
American Iron & Steel Institute

NAME AND ADDRESS OF INSTITUTION:
American Iron & Steel Institute
150 East 42nd Street
New York, New York 10017

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The cokemaking process is recognized as the most serious source of air pollution emissions in the iron and steel industry; charging of the ovens produces the greatest emissions. EPA is currently engaged with the American Iron & Steel Institute (AISI) in demonstrating a new charging technique for ovens which involves creating a negative pressure in the oven during charging to prevent emissions from entering the atmosphere. An improved charging car is provided with automatic operation and operating features designed to minimize exposure of the coke charge to the atmosphere during charging. Under a joint 50-50 funding arrangement, the EPA-AISI system has been constructed, is being placed into operation, and will undergo a year-long reliability testing program. A detailed emission testing program is being conducted to document the air pollution control capability of the system. If successful, the system will have the effect of significantly reducing emissions from both new and existing coke ovens at a reasonable cost to industry.

The demonstration is being conducted on a full scale 79-oven coke battery located at the Pittsburgh Works of the Jones & Laughlin Steel Company. The project was started in June 1970 and will be completed in December 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: R V Hendriks
Robert V. Hendriks
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.): (Supporting Agency)

A. Authorization Dates June 1970 to June 1973
B. Funding level $1,900,000 co-funded by EPA and AISI
C. ROAP/ID No. 21AFF

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, OR&M, EPA

TITLE OF PROJECT: Enclosed Coke Pushing and Quenching System Demonstration

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. A. Pengidore, Project Director, Weirton Steel Div.
A. Fraser, Assistant Project Director, Engineering, Weirton Steel Div.
H. R. Wood, Assistant Project Director, Environmental Control, Weirton Steel Div.

NAME AND ADDRESS OF INSTITUTION:
National Steel Corp.
Grant Building
Pittsburgh, Pennsylvania 15219

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Cokemaking is recognized as one of the major unsolved emission sources in the iron and steel industry. Most emissions occur during the operations of charging, pushing, and quenching. The subject Contract calls for the design and construction of the Enclosed Coke Pushing and Quenching System during Phase I. Phase II will consist of a one-year emission testing and system evaluation program which will include the characterization and quantification of emissions and documenting performance, including any degradation thereof, of the emission control system and operating and maintenance procedures and costs.

At the completion of the cycle in conventional coking, the incandescent coke is pushed into an open transfer car and transported to the quench station where it is deluged with water. During the push, undistilled volatile compounds react violently releasing copious emissions. Substantial additional emissions occur as a result of thermal drafting.

The National Steel system's innovative features include a hood over the coke guide, an enclosed receiving/transfer car, enclosed underground hoppers and a new controlled rate enclosed quench unit. The hood and transfer car are ventilated through a scrubber mounted on the locomotive. Hopper emissions are also cleaned in a scrubber while quench emissions are controlled by a demister. This system will be applicable to all new construction, estimated to equal one-half the present capacity over the next decade.

This jointly funded project was initiated on June 30, 1972, and is expected to be completed by June, 1974.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: Robert C. McCrillis
Robert C. McCrillis
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.): (Supporting Agency)

A. June 30, 1972 to June 30, 1973
B. Phase I funding - $800,000
C. Phase I; National Steel $4,694,000; EPA $800,000.
D. ROAP No. 21AFF, Task 06

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, OR&M, EPA

TITLE OF PROJECT: Smokeless Coke Pushing Demonstration

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Not specified yet.

NAME AND ADDRESS OF INSTITUTION:
Ford Motor Co.
3001 Miller Road
Dearborn, Michigan 48121

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Cokemaking is recognized as one of the major unsolved emission sources in the iron and steel industry. Most emissions occur during the operations of charging, pushing, and quenching. As presently envisioned, the subject program will consist of a one-year emission testing and system evaluation program which will include the characterization and quantification of emissions and documenting performance, including any degradation thereof, of the emission control system and operating and maintenance procedures and costs.

At the completion of the cycle in conventional coking, the incandescent coke is pushed into an open transfer car and transported to the quench station. During the push, undistilled volatile compounds react violently releasing copious emissions. Substantial additional emissions occur as a result of thermal drafting.

The Ford installation consists of a hood over the coke guide and modified quench car which collects the emissions during the push and directs them into a fume main. The hood and main are ventilated through a high energy venturi scrubber. This relatively low cost control system will be applicable to virtually all existing coke plants.

It is anticipated that this project will be initiated by December,1972, and is expected to be completed by February, 1974.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: Robert C. McCrillis
Robert C. McCrillis
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.): (Supporting Agency)

A. Contract under negotiation
B. Total contract effort estimated @ $200,000
C.
D. ROAP No. 21AFF, Task 09

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, OR&M, EPA

TITLE OF PROJECT: Kraft Recovery Furnace Modification Demonstration

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Kurt Henning
Project Director

NAME AND ADDRESS OF INSTITUTION:
Hoerner-Waldorf Corporation
2250 Wabash Avenue
P. O. Box 3260, St. Paul, Minnesota 55165

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The major source of odorous emissions in the kraft pulping process has traditionally been the recovery furnace. In the furnace, the two points of pollutant generation in order of importance are the direct contact evaporator and the combustion zone. Recent development of furnace designs without direct contact evaporators have virtually eliminated odorous emissions from this point in newly constructed furnaces. However, there are about 200 existing recovery furnaces with direct contact evaporators. One pulp company has undertaken the first-of-a-kind conversion of an existing furnace to eliminate the direct contact evaporator. EPA is supporting the test and evaluation program. The project will demonstrate by 1974 operation of existing recovery furnaces at emission levels equivalent to "best control technology" for new furnaces.

The project is being conducted at a Hoerner-Waldorf mill in Missoula, Montana. The project was started in July 1972 and is expected to be completed in June 1974.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: R V Hendriks
Robert V. Hendriks
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.): (Supporting Agency)

A. Dates of current project authorization July 1972 - June 1974
B. Funding level over period of performance $300,000
C. Facility constructed by Hoerner-Waldorf, at no cost to EPA for $2,500,000
D. ROAP/ID No. 21AFG

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: CSD, OR&M, EPA

TITLE OF PROJECT: Iron Foundry Cupola Recuperative Emission Control System

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Joseph Coursey
Foundry Manager

NAME AND ADDRESS OF INSTITUTION:
Flynn and Emrich Co.
3001 Grantley Avenue
Baltimore, Maryland 21215

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The subject of this contract is a one year emission testing and system evaluation program to be conducted by the Flynn & Emrich Co. on their new cupola emission control system. The objectives of this program include:

- Establishing the emission reduction rate and economics (both capital and operating costs) of the system.
- Establishing optimum operating and maintenance procedures.
- Establishing factors that will enable scaling the above results to suit various-size iron foundries.

The predominant process for melting and refining iron in the iron foundry industry is the cupola. It is also the major source of emissions. Conventional dust collection systems cannot accept the high temperature gases directly from the cupola. Cooling is generally achieved by air dilution or water quench resulting in the loss of large amounts of heat energy and greatly increased total gas volumes to be cleaned. The Flynn and Emrich system incorporates a novel dry media heat exchanger to recover this heat thereby cooling the gases without dilution. This will result in greatly reduced gas cleaning costs and, in addition, the recovered heat will be available as a source of non-polluting heat in the cupola and around the foundry. It is anticipated that this system will be applicable to most if not all cupolas in the iron foundry industry as well as other industries which are faced with the similar situation.

This contract was initiated on June 30, 1972; the technical effort is expected to be completed in January, 1974.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Robert C. McCrillis
Robert C. McCrillis
Project Officer

PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency)

A. June 30, 1972 to Aug. 30, 1973.
B. Total contract effort $95,289
C. Facility constructed at no cost to EPA (approx. capital cost $450,000)
D. ROAP 21AFT, Task 02

SI-SIE-7SA; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT:

Engineering Analysis Procedures

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. George Szego

NAME AND ADDRESS OF INSTITUTION:

Inter Technology Corporation
Warrenton, Virginia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Utilizing information on (1) chemical and physical performance of stationary source, air pollution control systems; (2) cost of the control systems; (3) source characteristics where the system would be applied; (4) forecasts on technology developments for each control system, on costs, and on source characteristics; and (5) cost/benefit analyses, procedures will be developed for performing impartial quantitive, and technically sound engineering analysis of all control systems within a given program element. Once these procedures are developed, they will be applied to the Particulate Control Program Element by the Contractor. The products of this effort will be (1) engineering analysis procedures, (2) an integration of all of the more important particulate and particulate control technology, and (3) an indepth comparison of all particulate control systems as they exist today and as they are expected to exist 5, 10, and 15 years from now. It is anticipated that the contract for this work will be signed by about November 15, 1972 and efforts completed by December 31, 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William R. Schofield
William R. Schofield
Project Officer, CSD

PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency)

(A) Current investigation:
(B) Annual level of effort in dollars: $175,000
(C) Multiple Funding: N/A
(D) I. D. Number: 21 ADE - Task 08

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Methods for Sampling and Analysis of Sulfur Oxide Control

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Robert M. Statnick, Research Chemist
Frank E. Briden, Chemist
Larry D. Johnson, Chemist
James A. Dorsey, Chief, Process Measurements Section

NAME AND ADDRESS OF INSTITUTION:
EPA-NERC-RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this work is to provide the measurement techniques required for the evaluation of air pollution control equipment. The approach is primarily applications research and development on sampling and analytical techniques which are required for short term studies and are not included in the contract programs conducted by the investigators. New techniques are investigated in the laboratory utilizing simulated gas stream and are then evaluated through field studies at industrial manufacturing sites. Manual, batch type sampling systems utilizing conventional sorption apparatus are employed in conjunction with infrared, ultraviolet, atomic absorption, X-ray fluoresence and electrochemical instruments or with classical wet techniques. Probing and on-line sample treatment techniques are also developed for use with process monitoring instrumentation. Mercury vapor, carbonyl sulfide, hydrogen cyanide and carbonyl chloride, carbonyl chloride are typical of the compounds investigated. The work was initiated in 1964 and is a continuing effort.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR
Dr. Robert M. Statnick

PROFESSIONAL SCHOOL (medical, graduate, etc.) RLB-CSD

(A) Current investigation: July, 1972 - June, 1973
(B) Annual level of effort in dollars: $38,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ADE 15

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Design, Fabrication, Installation, and Check-Out of Bench Scale Laboratory Equipment for Special Process Studies

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Collin C. Thomas, Manager
Pollution Test and Abatement Section

NAME AND ADDRESS OF INSTITUTION:
Tracor, Inc.
Sciences and Systems Group
Austin, Texas 78721

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project provides for the design, fabrication, installation, and check out of bench scale laboratory equipment loops, a flue gas generator, associated auxiliaries, and a bench scale scrubber for study of various gas scrubbing reactions.

The flue gas generator will be a natural gas burner capable of burning butane/propane as an emergency fuel. It will be equipped with gas regulating and flame safe controls with manual change from one fuel type to another. Combustion air from sub-stoichiometric to 100% excess will be supplied from a small blower. The main control panel, in addition to containing the combustion controls for the generator shall provide the necessary equipment for controlling and monitoring the temperature, pressure and flow rate for each of six test loops. In addition, equipment will be provided for each of four test loops to adjust the flue gas composition by the addition of controlled amounts of six pollutant gases. A 2-inch packed bed scrubber with 20-inch bed height will be designed and manufactured of pyrex glass to operate at L/G ratios of 9 to 60, gas flow rates of 5 to 40 SCFM and gas temperatures of 70 to 450°F.

This equipment will provide the in-house research laboratory with a versatile gas-liquid contactor system for investigation of important absorption reactions and mass transfer processes. The project started in May 1972 and should be completed in November 1972.

METHOD OF SUPPORT (CHECK ONE)
- ___ INTRAMURAL
- _X_ CONTRACT
- ___ GRANT
- ___ INTERAGENCY AGREEMENT
- ___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D C Drehmel

PROFESSIONAL SCHOOL (medical, graduate, etc.) D. C. Drehmel
Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: May 1972 - November 1972
(B) Annual level of effort in dollars: $105,000
(C) Multiple Funding: None
(D) I. D. Number: ~~Not in ROAP~~ -(EPA Contract No. 68-02-0829)
ROAP ADF

SI-SIE-79A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT: Catalytic Reduction of NO_x in Sulfur Free Combustion Flue Gases with Ammonia Pilot Plant Operation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

1. Mr. Marvin Stary - Project Director
2. Dr. Bill Chen - Engineer
3. Mr. Jules M. Kline - Chemist

NAME AND ADDRESS OF INSTITUTION:
Environics, Inc.
7424 Lorge Circle
Huntington Beach, California 92647

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Power plants and industrial furnaces which burn natural gas emit large quantities of NO_x. Combustion modification techniques can be used to accomplish 100 ppm minimum NO_x emission. 50 ppm NO_x emission have been demonstrated on a laboratory scale using NH_3 as a reductant in the presence of platinum catalyst, however, catalyst life has not been proven. The objectives of this contract are to prove 12 months catalyst life, control of 50 ppm combined NO_x and NH_3 emissions, establish optimal converter conditions and have maximum capital cost of $25/Kwh with 0.9 Mil/Kw operating cost.

A pilot plant processing 100,000 scfh of flue gas will be designed, constructed, and installed on a 150 Mw steam power plant (Valley Steam Plant Unit NO.4) belonging to the City of Los Angeles Department of Water and Power.

The pilot plant will take a slip stream of flue gases from the boiler outlet and will adjust the gas temperature to the proper level, mix NH_3 with the gas and pass them through the catalytic converter. The pilot plant will run continuously as long as the power plant is operating on natural gas. Exit gases will be monitored for NH_3 and NO_x.

The contract starts October 2, 1972 and ends December 1974.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_x_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Kenneth Baker

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer - CSD
(Supporting Agency)

A. 10/72 - 12/73
B. $270,000
C. N.A.
D. 21ADF02

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Technical and Economic Assessment of Catalysts for Control of NO_x from Stationary Power Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Jack Blumenthal
Head of Chemical Engineering Research Department

NAME AND ADDRESS OF INSTITUTION: TRW Systems Group
1 Space Park
Redondo Beach, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project will review and assess recent developments in NO_x catalysts to determine their technical and economic feasibility and applicability with respect to control of NO_x and possibly other pollutants from stationary power plants. This assessment will take into account all recent NO_x catalyst developments. Screening tests for effectiveness and resistance to typical poisoning agents will be made of available catalysts which have not been tested previously under representative conditions and which show potential for application to stationary sources. The impact of existing or proposed emission standards on the necessity or desirability of catalysts for NO_x control will be examined. Particular attention will be paid to reducing catalysts for the reduction of nitric oxide (NO) to nitrogen. However, oxidation catalysts that might oxidize NO to NO_2 will be considered provided a feasible system for removing NO_2 can be identified. Attention will be given to, but not limited to, identifying effective and more economical non-noble metal catalysts. Based on the results of the study, recommendations will be made with respect to further action to be taken by EPA in NO_x catalyst development.

The project should start in October, 1972 and be completed in September, 1974.

METHOD OF SUPPORT (CHECK ONE)

___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) L. H. Garcia
Project Officer
(Supporting Agency)

(A) Current authorization: October, 1972 - September, 1973
(B) Annual level of funding: $170,000
(C) Multiple funding: None

(D) I.D. Number: 21ADF03

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Bench Scale Studies of New Scrubbing Techniques for the Abatement of NO_x

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

L. H. Garcia, Research Chemical Engineer
Joshua S. Bowen, Special Projects Section, Chief

NAME AND ADDRESS OF INSTITUTION:

EPA-NERC-RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A series of experiments has been completed on absorption studies of equimolar concentrations of NO and NO_2 in aqueous alkaline solutions of sodium hydroxide, calcium hydroxide, and magnesium hydroxide. Equimolar concentrations of NO and NO_2 in flue gas were passed countercurrently to the various alkaline solutions in a bench-scale packed column. The concentrations of NO and NO_2 were from 250 ppm to 750 ppm each. Liquid velocity, gas velocity, size of packing, and liquid temperature were the parameters varied. The results of this experimentation indicates that irrespective of scrubbing reagent concentration in the scrubbing solution, the percent removal was between 12 to 29 percent.

In a continuation of this effort, it is planned to screen additional candidate solutions that might be useful for the abatement of NO_x. These additional solutions may include sodium hypoiodite, sodium hypochlorite, hydrogen peroxide, alkaline solutions of 2-methoxyphenol, etc. Based on literature references, some of these solutions appear to remove NO_2 quite effectively. In addition, the effect of the presence in the flue gas of constituents such as SO_2, CO_2, CO, O_2 and ozone will be investigated as appropriate.

These studies are in support of the Division's effort to develop effluent gas cleaning technology as an effective means of NO_x control, and the results are used to guide various research efforts, to evaluate research grant applications and proposals, and to explore new concepts and approaches.

The project was started in July, 1970 and is expected to continue through June, 1974.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR
L. H. Garcia

PROFESSIONAL SCHOOL (medical, graduate, etc.) RLB, CSD

(A) Dates of Current project authorization: July, 1972 - June, 1973
(B) Annual level of effort in dollars: \$20,000
(C) Multiple Funding: No joint funding
(D) I. D. Number: 21 ADF 08

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Control Systems Division, Office of Research and Monitoring, EPA

TITLE OF PROJECT:

Development of Procedures for Flame Characterization

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

L. P. Combs, Program Manager
R. H. Gurnitz
R. A. Dickerson
E. Knuth (UCLA-subcontractor)

NAME AND ADDRESS OF INSTITUTION:

Rocketdyne, Division of North American Rockwell
6633 Canoga Avenue, Canoga Park, California 91304

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This program is for the design, development, demonstration, and delivery of probes to measure temperature, chemical species, and velocity in flames. The program will seek to combine advanced aerospace technology with conventional flame measurement methods to produce a probe, or set of probes, which cause minimum disturbance to the flame, yet accurately measure the phenomon of interest. The probes will be designed to function in gas, oil, and pulverized coal flames without fouling. If possible, the three measurements will be combined into one probe. Target specifications are: Temperature: 2000° to 3600° F ± 5° with response time of 1 mil sec., Chemical species considered: Stable species: NO (5 ppm), H_2 (1000 ppm), O_2 (1000 ppm), CO (100 ppm), SO_2 (25 ppm), CO_2 (1%), N_2 (25 ppm), NO_2 (5 ppm), Ar (50%), Unstable species: O (0.1 ppm), N (0.1 ppm), OH (0.1 ppm), H (0.1 ppm), Velocity: magnitude (0-250 ft/sec ± 3%) and direction (+ 5°).

The developed probes will be used in various in-house and contractual programs to study how the combustion process can be modified to reduce the formation of nitrogen oxides, particulate, hydrocarbons and other air pollutants of interest. The program started in September, 1972 and will be completed in March, 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William B. Kuykendal

PROFESSIONAL SCHOOL (medical, graduate, etc.) William B. Kuykendal
Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 9/72 - 3/73
(B) Annual level of effort: $96,393
(C) Multiple Funding: None
(D) T. D. Number: 21 ADG

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Applications of Holographic Methods to the Measurement of Flames and Particulate

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

B. J. Matthews, Project Manager
A. B. Witte
R. F. Wuerker

NAME AND ADDRESS OF INSTITUTION: TRW Systems, Inc.
One Space Park
Redondo Beach, California 90278

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This program will seek to accomplish two goals via pulsed holographic techniques. The first will be to employ holographic interferometry to obtain a three dimensional temperature profile from a gas burner. The burner can be made to operate as a diffusion flame burner or as a premixed flame burner. The interferometrically derived temperature data will be compared with temperature data obtained from thermocouples in the flame. Upon accomplishment of satisfactory results in the gas flame, the technique will then be applied to a small scale oil burner. By generating an accurate three dimensional temperature profile a much better insight into the formation of NO_x within the flame should result.

The second program objective will be to accurately characterize the light scattering signatures from monodisperse particulate. The size ranges of interest will be from submicron to 100 microns diameter. Four variables will be evaluated to assess the feasibility of recording particulate in the one micron size range via scattered light holography. These variables are: 1. particle size; 2. angular illumination of the particle; 3. particle number density; and 4. incident laser beam diameter. This data will allow an accurate assessment of scattered light holography as a viable tool for particle size measurement and additionally allow better interpretation of previously obtained holographic data. The program was started in September, 1972 and will be completed in February, 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_x_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William B. Kuykendal
William B. Kuykendal
PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 9/72 - 2/73
(B) Annual level of effort in dollars: $57,600
(C) Multiple Funding: None
(D) I. D. Number: 21 ADG

SI-SIE-70A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT:
A study of Combustor Flow Computation and Comparison with Experiment

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.
Henry McDonald
Robert F. Anasoulis
Robert E. Olson, Chief, Gas Dynamics Section

NAME AND ADDRESS OF INSTITUTION:
United Aircraft Research Laboratories, East Hartford, Connecticut 06108.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to develop a mathematical model based on sound fundamental principles eventually capable of predicting pollutant emissions in both classical and new concept combustion systems. The approach is to use a high speed computer routine for the solution of the two-dimensional Navier-Stokes equations for simultaneous heat, mass, and mementum transfer with chemical reaction. This code forms the basis for the work and is similar to the elliptic flow routine recently developed by Spalding et. al. at Imperial College, England. The base program (termed CRISTY) is currently being updated to accommodate radiant heat transfer (four flux), finite rate chemical kinetics, and a more realistic turbulence model. Each step of the code development is being checked by comparison with experimental data currently being obtained at the Institute of Gas Technology. The latter stages of this work will be directed at a combined experimental/theoretical analysis to improve the effective viscosity model through better accounting of turbulent fluctuations with time.

The ultimate benefit of this program will be a predictive tool for use in data correlation and control strategy optimization. This work was initiated in June, 1972 and is anticipated to carry on into FY-75 in support of process studies.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D. W. Pershing
D. W. Pershing

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 6/72 - 3/73
(B) Annual level of effort in dollars: $40,000
(C) Multiple funding: None
(D) I. D. Number: 21 ADG 05

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Investigation of the Mechanism and Chemistry of Fuel Nitrogen Conversion to Nitrogen Oxides in Flames

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

W. H. Nurick, Principal Investigator
A. Axworthy
W. Schuman
L. P. Combs

NAME AND ADDRESS OF INSTITUTION: North American Rockwell Corporation
Rocketdyne Division, 6633 Canoga Park Avenue
Canoga Park, California 91304

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It has been demonstrated that the chemically bound nitrogen present in heavy fuel oils and coals are partially converted to nitrogen oxides (NO_x) in the combustion process and may contribute a major portion of the total NO_x from stationary combustion sources. The objective of this research program is to define the mechanisms and kinetics of fuel nitrogen conversion to NO_x and other products, to determine the fate of nitrogen not converted to NO_x and to generate information to optimize control of fuel NO_x by combustion modification.

The experimental portion of the study will include both fuel decomposition and combustion experiments. In the fuel decomposition studies the sample being studied will be rapidly heated to achieve a time temperature history simulating that of the fuel in a furnace. The decomposition will be studied under inert and slightly oxidizing atmospheres and all products will be identified to determine important nitrogen containing species. The fuels to be studied are ten heavy fuel oils and ten coals selected to have a wide range of properties. In addition selected pure nitrogen containing heterocyclic compounds will be studied. Based on these results the combustion kinetics studies will be defined mathematical modeling will be used to aid in interpretation and generalization of the results.

The duration of the project is July 1972 through February 1974.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_x_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR G Blair Martin

PROFESSIONAL SCHOOL (medical, graduate, etc.) G. Blair Martin
Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 7/72 - 3/73
(B) Annual level of effort: $125,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ADG 08

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT:
Definition of the Mechanism and Kinetics of the Formation of NO_x and Other Pollutants in Combustion Reactions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Victor S. Engleman
Research Engineer

NAME AND ADDRESS OF INSTITUTION:

Esso Research & Engineering
GRL, P. O. Box 8, Linden, New Jersey 07036

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this program is to define the mechanisms and chemistry of the formation and destruction of NO_x and other pollutants in a combustion environment simulating actual conditions. The approach employs experimental combustion systems combining the capability of studying various conditions (diffusion flames, permixed flames, well stirred environments) with controlled temperature distributions. The initial phase focused upon the coupling between NO_x and hydrocarbon chemistry using H_2, CO, methane and propane as fuels. The next phase is aimed at defining the mechanism and kinetics of known combustion modification techniques. Later phases will examine the chemistry of oil and coal combustion. This program has also focused upon review of kinetic rate literature in an effort to establish mechanistic schemes consistent with the experimental data. The modeling tools for use in this correlation are those already delivered by Ultra Systems (68-02-0270). Ultimately, this program will provide insight into the factors fundamental to the formation of pollutants. The work was begun in November 1971 and it is anticipated that it will continue into F-76.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D. W. Pershing

D. W. Pershing
Project Officer, CSD

PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency)

(A) Dates of current project authorization: 12/72 - 12/73
(B) Annual level of effort in dollars: $130,000
(C) Multiple funding: None
(D) I. D. Number: 21 ADG 09

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT:

Development of Mathematical Models for Combustion Generated Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Thomas J. Tyson
Robert Wilson

NAME AND ADDRESS OF INSTITUTION:

Ultra Systems, 2400 Michelson Drive, Irvine, California 92664

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this program is to develop a semi-empirical mathematical model of the fossil-fuel combustion process utilizing primarily existing finite rate chemistry programs. The program will consider the (a) turbulent mixing, (b) radiant heat transfer, and (c) chemical kinetic aspects in sufficient detail to predict pollutant emissions. The approach is to first deliver the existing finite rate computer code to EPA for in-house usage. The program then concentrates upon utilization of the existing stream tube kinetics code as a base for analysis of detailed specie, temperature, and velocity data presently being generated by IGT (68-02-0216) and others. The fluid mechanical aspects of the anlysis are to be handled empirically. By utilizing existing tools in conjunction with experimental data the program will develop a computer code for theoretical support of EPA combustion programs. The final goal is to develop a model of combustion capable of predicting pollutant emissions. This will provide insight into the formation of pollutants and the correlation and scale-up of experimental data.

This project was initiated in June 1972 and it is anticipated that this portion will be completed in August 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D. W. Pershing
D. W. Pershing
PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 6/72 - 8/73
(B) Annual level of effort in dollars: $90,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ADG 10

SI-SIE-70A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Investigation of Nitric Oxide Formation in Combustion Processes with Strong Recirculation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Craig T. Bowman
Dr. Leonard S. Cohen

NAME AND ADDRESS OF INSTITUTION: United Aircraft Research Laboratories
East Hartford, Connecticut 06108

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There is evidence that NO_x in turbulent diffusion flames may be formed in localized areas approaching adiabatic flame temperatures. The objective of this research program is to study one possibility, a small well-stirred reactor and to determine the relationship of reactor properties and conditions to NO_x formation.

The experimental apparatus utilizes a bluff body to generate a well-stirred reactor region in the wake. The residence time can be varied by changing free stream velocity and the temperature by changing the stoichiometry of the inlet stream. Temperature and NO concentration are measured spectroscopically in the reactor and overall NO is measured downstream in the flue with the mass spectrometer. Cold flow experiments and mathematical modeling are used to extend the results of the study.

The duration of this study is April 1972 to March 1973.

METHOD OF SUPPORT (CHECK ONE)
☐ INTRAMURAL
☒ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR
G. B. Martin
Project Officer, CSD
(Supporting Agency)

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) Dates of current project authorization: 4/72 - 3/73
(B) Annual level of effort: $100,000
(C) Multiple funding: None
(D) I. D. Number: 21 ADG 11

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Development of Combustion System Design Criteria for Control of Nitrogen Oxides Emissions from Heavy Oil & Coal Furnace

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. M. P. Head
Dr. J. M. Lowes
Dr. R. Walmsley

NAME AND ADDRESS OF INSTITUTION:

International Flame Research Foundation
IJmuiden, Holland

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this research program is to develop the data necessary to reduce pollutant emissions from heavy oil and pulverized coal fired industrial furnaces. This work will provide essential information on the relationship of various burner design parameters, operating conditions, and furnace interactions to formation of nitrogen oxides and other pollutants.

The research program was structured to determine the relationship between various burner design and operating parameters, and pollutant formation with emphasis on nitrogen oxides. The research is being conducted in a 10^7 BTU/hr. experimental furnace capable of firing natural gas, fuel oil or pulverized coal. The furnace has access posts to allow detailed temperature, composition and velocity measurement using a variety of flame probes. The variables examined to date include excess air, percent primary air supplied as carrier for the coal, inlet air, swirl, fuel velocity and bound nitrogen concentration in the coal.

A series of input-output tests are made to determine the overall trends of NO_x emissions with the various parameters for natural gas and coal. Based on these results the flames to be probed in detail were selected. The results indicate that rapid mixing of coal with air promotes high NO_x values, while devolatization of the coal in an air difficient environment produces lower NO_x. The results also indicate that bureau design changes have the potential for producing lower NO_x emissions.

The duration of this project is from June 1971 through September 1974.

METHOD OF SUPPORT (CHECK ONE)

____ INTRAMURAL
__x__ CONTRACT
____ GRANT
____ INTERAGENCY AGREEMENT
____ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR GBMartin
G. B. Martin

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 8/72 - 9/73
(B) Annual level of effort: $150,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ADG 40

SI-SIE-78A; REV. 9-54

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Investigation to Determine the Effects of Design and Operating Variables on NO_x Formation in Coal-Fired Furnaces

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Warnie L. Sage
Group Leader, Combustion Systems

NAME AND ADDRESS OF INSTITUTION:
Babcock & Wilcox
Research & Development Division, Alliance, Ohio 44601

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this project is to optimize the application of combustion modification techniques to wall-fired coal boilers and thereby minimize pollutant emissions. The approach is to first investigate on a coal fired furnace a variety of combustion modification techniques which could be applicable for control of NO_x and related combustible emissions (C,CO,HC) from coal fired utility boilers. The relation of combustion parameters to NO_x control techniques such as flue gas recirculation and staged combustion are being investigated. The second phase of the work involves a detailed evaluation of the most suitable control techniques and the construction of a multiburner-multifuel, experimental furnace. The final portion of the work will utilize the experimental multiburner facility and the background information on single burner units to optimize application of staging and flue gas recirculation to multiburner pulverized coal systems. The work will ultimately lead to the successful demonstration of combustion modification control of NO_x and related emissions (C, CO, HC) from wall coal fired utility boilers.

This work was initiated in October, 1972 and is anticipated to end in FY-77.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: D. W. Pershing
D. W. Pershing
Project Officer, CSD

PROFESSIONAL SCHOOL (medical, graduate, etc.): (Supporting Agency)

(A) Dates of current project authorization: 10/72 - 4/73
(B) Annual level of effort in dollars: $100,000
(C) Multiple funding: None
(D) I. D. Number: 21 ADG 41

SI-SIE-79A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT:
Evaluation of Combustion Modification Techniques for Control of Pollutant Emissions in Gas and Oil Combustion

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. W. Pershing
J. W. Brown
E. E. Berkau, Section Chief

NAME AND ADDRESS OF INSTITUTION:
EPA, NERC, RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this project is to perform timely in-house (EPA) evaluation of promising combustion modification techniques and to develop new concepts for the control of NO and unburned hydrocarbon emissions. The approach is to experimentally study the combustion of natural gas, No. 2 oil, and coal in a 300,000 BTU/hr laboratory combustor. The test rig allows both hot wall (refractory) and quick quench (water-wall) studies. Initial testing is being concentrated upon the relationship of burner design to the effectiveness of flue gas recirculation and staged combustion for controlling pollutant emissions. The program is to provide direct support and guidance for larger scale contractual work on-going at B&W (68-02-0634) and IGT (68-02-0216). Special attention is given to problems associated with coal firing such as slagging, flame stability, etc. The ultimate goal of this program is the control of thermal and fuel nitrogen through industrially acceptable means. This work was initiated in July 1972 and will continue into 1976 in support of pilot scale studies.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: D. W. Pershing
D. W. Pershing

PROFESSIONAL SCHOOL (medical, graduate, etc.): Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 7/72 - 6/73
(B) Annual level of effort in dollars: $75,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ADG 42

SI-SIE-78A; REV. 8-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Development of Low Emission Combustion System Utilizing External Flue Gas Recirculation & Delay Combustion Air Addition

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. R. P. Wilson, Jr.
Larry Muzio

NAME AND ADDRESS OF INSTITUTION:
Ultrasystems, Inc.
2400 Michelson Drive, Irvine, California 92664

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this research program is development of low air pollutant emission combustion systems by application of internal flue gas recirculation, delayed aid addition and/or water injection for commercial oil and gas combustion equipment. The experimental work is concentrated on No. 6 oil combustion up to 20 gallons per hour, but also considers equivalent firing rates on No. 2 oil and natural gas.

An experimental model combustion system has been constructed with variable parametric features for a full investigation of all significant facets of flue gas recirculation and staged combustion. The operating characteristics of the experimental combustor simulate those of various classes of commercial package boilers in heating and steam generating service. The experimental system includes instrumentation for complete air pollutant measurement (e.g. chemiluminescent analyzer for NO_x) and determination of furnace efficiency. The furnace is operational and a research program is being planned. Variables to be studied are excess air, firing rate, primary to secondary air ratio, secondary air swirl, amount and method of flue gas recirculation, and amount and method of secondary air addition for staged combustion. The fuel to be used is a residual oil containing 0.33% sulfur and 0.38% chemically bound nitrogen. The goal of the study is a combustion system operating with a minimum of air pollutant emissions (i.e. < 0.02 gms carbon particulate/kg and < 0.75 gms NO/kg fuel) at a reasonable measured combustion efficiency.

The project began in June 1971 and will be completed in June 1974.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR GB Martin

PROFESSIONAL SCHOOL (medical, graduate, etc.) G. B. Martin
Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 7/72 - 6/73
(B) Annual level of effort in dollars: $108,000
(C) Multiple funding: Ultrasystems, Inc. - $23,000
American Petroleum Institute - $35,000
Environmental Protection Agency - $50,000
(D) I. D. Number: 21 ADG 43

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

FILE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Design of an Optimum Oil Burner for Control of Pollutant Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. A. Dickerson, Combustion of Physics Division
A. S. Okuda, Combustion of Physics Division
L. P. Combs, Program Manager, Combustion & Materials Technology

NAME AND ADDRESS OF INSTITUTION:
North American Rockwell Corporation, Rocketdyne Division
6633 Canoga Avenue, Canoga Park, California 91304

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this research program is to determine the critical flame characteristics of conventional high pressure atomizing distillate oil burners and to relate these characteristics to pollutant emissions. Based on this information a versatile experimental burner is to be designed and used to study design parameters critical to controlling air pollutant emissions and combustion efficiency. The experimental burner design should be compatible with that of commercially available high pressure atomizing distillate oil burners.

Experimental work has been conducted on luminous flame high pressure distillate oil burners in the 1 to 12 gallon per hour range. Cold flow measurements of air flow patterns, fuel droplet size and fuel distributions have been made. Flow patterns, local pollutant measurements and flue gas measurements have been made under hot fire conditions. A first generation versatile burner was constructed and tested with some encouraging results. Investigation of additional design concepts are being pursued in an attempt to produce further reduction of emissions of NO_x.

The project was started in June 1971 and completion is expected in June 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR GBMartin
G. B. Martin

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSC
~~(Supporting Agency)~~

(A) Dates of current project authorization: 5/72 - 5/73
(B) Annual level of effort in dollars: $230,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ADG 44

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Evaluation of Combustion Techniques for Control of Pollutant Emissions in Gas and Oil Combustion

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. G. Lachapelle
E. E. Berkau, Section Chief

NAME AND ADDRESS OF INSTITUTION.

EPA, NERC, RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project provides in-house capability to perform timely evaluation of promising combustion modification techniques for control of NO_x and related pollutant emissions (C, CO, HC). Additionally, it provides definitive guidance in development of contract efforts especially in the industrial area. The project will develop meaningful data suitable for scale-up to larger commercial equipment.

The approach utilizes versatile experimental furnaces to evaluate potential combustion techniques under controlled conditions. The furnaces have capability for gas firing as a baseline case, however, the primary emphasis is on oil combustion. Follow-on work could evaluate fuels-of-the-future (low BTU gas, mixed fuels, etc.). The full gamut of operating variable will be evaluated from fuel through process. Control of NO_x from thermal and fuel effects is the ultimate goal; however, full consideration will be given to the practical aspects of fuel combustion, i.e. combustion and process efficiency.

This project provides personnel with valuable first-hand operating experience with the potential of combustion modifications for control of pollutant emissions. It will define potential problem areas and quantitate the effectiveness of these combustion modifications. Of equal importance is the impact that these studies will have on rational and expeditious development of contract efforts in the industrial area.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D G Lachapelle
D. G. Lachapelle

PROFESSIONAL SCHOOL (medical, graduate, etc.) RLB, CSD

(A) Dates of current project authorization: 7/72 - 6/73
(B) Annual level of effort in dollars: $63,000
(C) Multiple Funding: None
(D) I. D. Number: 21 ADG 45

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Characterization and Control of Air Pollutant Emissions from Combustion of Fuels

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

G. B. Martin
E. E. Berkau, Section Chief

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The overall objectives of this research project are to determine the characteristic air pollutant emission types and levels from: (1) combustion of current fuels in use, and (2) combustion of new fuels that are projected for major use in the future. This project will evaluate the air pollutant control potential for a wide range of liquid, gaseous, and solid fuels. All of the investigation will be performed under controlled laboratory conditions and will provide information that will establish the air pollutant emission picture of fuels in different combustion systems. A series of fuels will be tested for emission characteristics over a wide range of conditions with appropriate combustors. This series will include heavy oils, desulfurized heavy oils, distillate oils, crude oil, methanol, low and high BTU gases, and coal. A survey of fuels will be made, concentrating on obtaining information (cost, composition, etc.) about fuels in present use and new "clean" fuels that may become major energy sources as new air pollution control regulations are passed. This research project was started during July, 1972 and is scheduled for completion in June, 1977.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR GBMartin
G. B. Martin

PROFESSIONAL SCHOOL (medical, graduate, etc.) RLB, CSD

(A) Dates of current project authorization: 7/72 - 6/73
(B) Annual level of effort in dollars: $53,000
(C) Multiple funding: None
(D) I. D. Number: 21 ADG 46

SI-SIE-75A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Aerodynamic Control over Emissions of Nitrogen Oxides and Other Pollutants from Fossil Fuel Combustion

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dennis H. Larson
Donald Shoffstall
Jack D. Nesbitt

NAME AND ADDRESS OF INSTITUTION:

Institute of Gas Technology
IIT Center, Chicago, Illinois

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to provide design criteria to minimize NO_x emissions from gas fired systems, while maintaining satisfactory emission levels of other pollutants (CO, unburned fuel) and system efficiency. The approach is to direct the initial work at single burner furnace design. Variables to be considered include fuel input rate, air fuel stoichiometric ratio, air/fuel momentum ratio, location and strength of recirculation, turbulence, burner inlet design and heat removal rate. Each will be evaluated over a wide range including that typical of current practice on a 10^6 BTU/hr furnace. Later work will consider multi-jet single burners, opposed jet burners and multiburner systems. These criteria will be applicable to design of all the full range of gas burners, from small residential to multiburner utility boilers and will provide a model or basis for control of emissions from oil and coal fired systems.

This program was initiated in June, 1971 and will continue into FY-76.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D. W. Pershing

PROFESSIONAL SCHOOL (medical, graduate, etc.) D. W. Pershing
Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 6/71 - 11/72
(B) Annual level of effort in dollars: $175,000
(C) Multiple funding: None
(D) I. D. Number: 21 ADG 47

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT Evaluation of the Effectiveness of Fuel Additives in Reducing Emissions in Coal and Oil Combustion

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

David W. Locklin, Program Director
Robert D. Giammer, Research Mechanical Engineer

NAME AND ADDRESS OF INSTITUTION: Battelle Memorial Institute, Columbus Laboratories
505 King Avenue, Columbus, Ohio 43201

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this research project is to conduct a thorough experimental and theoretical investigation to determine the possibility of utilizing additives to reduce pollutant emissions from coal and oil combustion. Pollutants of primary interest are NO_x, smoke, and particulates: especially PNA and N-heterocyclic compounds. Pollutants of secondary interest are CO, hydrocarbons, SO_2, and SO_3. Commercially available additives and other materials selected as a result of the theoretical considerations are to be experimentally investigated with #2 and #6 fuel oil and pulverized coal. The experimental facility will be capable of firing these fuels with and without additives, simultaneously measuring pollutant emissions, and will have heat transfer characteristics typical of commercial boilers. In the theoretical investigation attention is being directed to the mechanisms of possible additive effectiveness in the preflame, and post-flame regions of a combustion chamber. A state-of-the-art report on additive technology will be prepared from the theoretical investigation information. This research project was started during June, 1972 and is scheduled for completion by March, 1974.

METHOD OF SUPPORT (CHECK ONE)
☐ INTRAMURAL
☒ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR G. B. Martin
PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

(A) Date of current project authorization: 5/72 - 1/73
(B) Annual level of effort in dollars: $100,000
(C) Multiple funding: None
(D) I. D. Number: 21 ADG 62

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT:
Pilot Field Test Program to Study Methods of NO_x Formation in Tangentially Coal Fired Steam Generating Units

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

C. E. Blakeslee
A. P. Selker

NAME AND ADDRESS OF INSTITUTION: Combustion Engineering, Inc.
1000 Prospect Hill Road, Windsor, Connecticut 06095

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study will identify, develop and recommend the most promising combustion modification techniques for control of NO_x and related pollutants (C, CO, HC) from tangential coal-fired utility boilers. This will be accomplished in a five phase program as follows:

Phase I: Selection of a suitable tangentially coal fired field boiler, preparation of an experimental test program, cost estimates for modifications and tests, schedule development, preparation of engineering drawings.

Phase II: Preparation of fabrication drawings, purchase and construction of equipment, installation of instrumentation, determine baseline emissions.

Phase III: Complete modifications for testing, finalized test preparations and schedules.

Phase IV: Conduct experimental program, analyze and correlate data, prepare final report.

Phase V: Preparation of application guidelines to existing and new tangentially coal fired boilers based on test results and analysis.

Included among the combustion modifications to be studied in Phase IV are: load variation, furnace wall deposits; excess air and preheat; water injection; overfire air locations, rates, velocities and temperatures; flue gas recirculation location, rates and temperatures; combinations of techniques; and variations in fuel. The work will be performed at Alabama Power Company's Barry station located near Mobile, Ala. Starting date for this project is April 1972. Anticipated completion date is July 1975.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D G Lachapelle
D.G. Lachapelle
PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSC
~~(Supporting Agency)~~

(A) Dates of current project authorization: 4/72 - 11/72
(B) Annual level of effort in dollars: $73,329
(C) Multiple funding: None
(D) I. D. Number: 21 ADG 80

SI-SIE-7A; REV. 9-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Preliminary Evaluation of Combustion Modifications for Control of Pollutant Emissions from Multiburner, Coal-Fired Combustion Systems

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Daniel Bienstock
C. R. McCann
J. J. Demeter

NAME AND ADDRESS OF INSTITUTION: U. S. Bureau of Mines, Energy Conversion Section
4800 Forbes Avenue, Pittsburgh, Pa., 15213

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project provides quick response low cost capability to evaluate and screen promising combustion modifications to control NO_x and related pollutant emissions (C, CO, HC and particulates) from wall coal fired utility boilers. The study will utilize an experimental 500 pound per hour coal-fired combustor geometrically and functionally equivalent to a utility boiler. Included among the combustion modifications to be evaluated are: low excess air firing, off stoichiometric firing, and flue gas recirculation through the coal pulverizers and secondary air supply of the burner windboxes. These studies will provide definitive guidance and direction for larger scale, longer term studies on full size multiburner coal-fired utility boilers and will minimize exploratory studies on large equipment with techniques that show marginal promise for reduction of NO_x and related pollutant emissions. Significant cost and time saving will ultimately be realized through this study. The work will be performed at the U. S. Bureau of Mines facility at Bruceton, Pa. Starting date of this project is October 1972. Completion date is May 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
X INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR D G Lachapelle
D. G. Lachapelle
Project Officer, CSD

PROFESSIONAL SCHOOL (medical, graduate, etc.) (Supporting Agency)

(A) Dates of current project authorization: 10/72 - 5/73
(B) Annual level of effort in dollars: $100,000
(C) Multiple Funding:
(D) I. D. Number: 21 ADG 81

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Field Testing: Application of Combustion Modification Techniques to Control Pollution Emissions from Large Industrial and Utility Boilers

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. William Bartock, Project Director
Mr. A. H. Cranford, Senior Advisor
Mr. E. H. Manny, Advisor

NAME AND ADDRESS OF INSTITUTION: ESSO Research & Engineering Company
P. O. Box 4, Linden, New Jersey 07038

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to characterize the emissions from and develop emission factors for utility boilers and to determine the state-of-the-art in combustion control for this equipment. The effects of combustion modification techniques (e.g. staged combustion, low excess air, flue gas recirculation, etc.) on pollutant emissions and boiler operation will be determined. Utility boilers typical of current design (e.g. tangential, frontwall, etc.) which are suitable for implementing combustion modification techniques will be tested. Emphasis will be placed on coal-fired boilers because of high NO_x emissions and because of operating problems such as slagging and fouling which are encountered when combustion modification techniques are employed. The program will include preliminary tests in which the effect of combustion modification on air pollutant emissions will be determined, interim tests in which the optimum combinations of these techniques will be employed to determine the effect on slagging, fouling, and flame impingement, and two week tests in which tube corrosion data will be obtained. Some tests will be made to determine the effect on tube corrosion over a six-month period. In recent tests, NO reductions of up to 40 percent have been achieved at full load with coal-fired utility boilers without creating slagging or fouling problems. Tube corrosion effects are still being investigated. The project was started in February, 1972 and will be completed in December, 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Robert E. Hall
R. E. Hall

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 2/72 - 1/73
(B) Annual level of effort in dollars: $250,000
(C) Multiple funding: None
(D) I. D. Number: 21 ADG AL

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Investigation of the Effect of Combustion Parameters on Emissions from Residential and Commercial Heating Equipment

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. W. Locklin, Project Director
R. E. Barrett, Project Engineer
S. E. Miller, Sampling Team Leader

NAME AND ADDRESS OF INSTITUTION:

Battelle Memorial Institute, Columbus Laboratories
505 King Avenue, Columbus, Ohio 43201

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to characterize the emissions from and develop emission factors for residential and commercial heating equipment, and to determine the state-of-the-art in combustion control for this equipment. The effect of combustion parameters (e.g. excess air, load, burner design, etc.) on pollutant emissions and boiler operation, and the effect of time on burner performance, will be determined. Residential and commercial furnaces and boilers typical of current design will be selected and tested according to sound statistical principles. Units will be tested which fire natural gas, No. 2 oil, and/or No. 6 oil. Also, a low sulfur residual oil will be fired as a reference fuel in all commercial boilers tested. Each unit will be tested in an "as found" and "tuned" condition in addition to tests to determine the effects of combustion parameters. Reliable emission factors for residential and commercial furnaces and boilers will be obtained from this program. It will also show what can be done today to reduce emissions from existing equipment. Information will be obtained which can be used by manufacturers to aid them in the design of low emission equipment and by owners and operators to help them learn how to operate existing equipment to achieve low emissions. This work is being performed on various domestic furnaces and commercial boilers throughout the U. S. The project was started in October, 1971 and will be completed in September 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
_X_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Robert E. Hall
R. E. Hall

PROFESSIONAL SCHOOL (medical, graduate, etc.) Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 10/71 - 8/72
(B) Annual level of effort in dollars: $150,000
(C) Multiple funding: American Petroleum Institute - $75,000
Environmental Protection Agency - $75,000
(D) I.D. Number: 21 ADG AM

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Characterization of Emissions and Performance of Conventional and Prototype Stationary Combustion Systems

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. H. Wasser, Research Chemical Engineer
E. E. Berkau, Section Chief

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The overall objectives of this research project are to determine the characteristic air pollutant emission levels from: (1) existing conventional combustion equipment, (2) prototype combustion equipment and, (3) modified combustion equipment. All of this investigation will be performed under controlled laboratory conditions and will provide information that will establish the performance capability of a wide range of furnaces, boilers, and engines. The potential for various hardware and operating modifications to control emission levels will be determined using actual commercial combustion equipment. A series of combustors will be tested for emission characteristics over a broad range of operating conditions with appropriate fuel types. This series will include scotch marine and firebox firetube package boilers, a steel-lined and cast iron boiler and a gas turbine engine for the initial work with other units to be added later in the program. A series of equipment modifications such as different burner designs, nozzles, etc. will be evaluated for emission control effects. Commercial combustion equipment will be surveyed to identify burners with significant design differences with emission control potential. This research project was started July, 1972 and is scheduled to run to June, 1977.

METHOD OF SUPPORT (CHECK ONE)
_X_ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John H. Wasser
J. H. Wasser

PROFESSIONAL SCHOOL (medical, graduate, etc.) RLB, CSD

(A) Dates of current project authorization: 7/72 - 6/73
(B) Annual level of effort in dollars: $108,000
(C) Multiple funding: None
(D) I. D. Number: 21 ADG A0

SI-SIE-78A; REV. 9-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, OR&M, EPA

TITLE OF PROJECT: Molecular Sieve Control of NO_x Demonstration

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

U.S. Army Project Manager: J. Santos

NAME AND ADDRESS OF INSTITUTION: U. S. Army Munitions Command
Dover, New Jersey 07801

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this program is the commercial scale co-sponsored demonstration of Nitric Acid Industry control using molecular sieves. Successful demonstration is expected to decrease emissions from nitric acid plants to well under 50 ppm - perhaps as low as an order or magnitude below existing standards (∿209 ppm for new plants). Molecular sieves are aluminosilicate structures which contain uniformly sized pores. By proper choice of the sieve species, it is possible to selectively adsorb various gaseous molecules (such as NO_x). In commercial operation, NO_x-laden gases would be passed through a sieve bed until the bed's capacity was reached: at that time, the gas stream would be switched to a second bed while the first bed was being regenerated by heat and cooled so that it could again be used when the second bed reached "breakthrough". Since there are no emissions until breakthrough occurs, rapid bed switching allows emission levels to be kept very low. To this end, EPA has signed an interagency agreement with the U. S. Army to provide for the installation of such a device on an Army-owned nitric acid plant at Holston Army Ammunition Plant in Kingsport, Tennessee. The agreement was signed in June 1972; start-up is intended for Jan. 1974 and will be followed by an extensive test program of at least 1 year's duration. All program phases should be completed by April 1975.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
_X_ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: G S Haselberger
G. S. Haselberger
Project Officer
PROFESSIONAL SCHOOL (medical, graduate, etc.): (Supporting Agency)

A. Program duration: 6/72-4/75
B & C. Total program funding: EPA, $190,000; U. S. Army, $900,000 (est.)
D. I.D.No.: 21ADH

SI-SIE-70A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT: Selection and Development of Reagents and Design Data for Wet Scrubbers for Odor Control

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Belur N. Murthy
Dr. Joshua S. Bowen, Special Projects Section

NAME AND ADDRESS OF INSTITUTION:

EPA-NERC-RTP, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Bench scale laboratory studies with gas-liquid systems are being conducted to select specific liquid reagents for scrubbing of odorous compounds from gaseous emissions of rendering plants and chemical manufacturing sources. The effect of operating conditions like reagent concentration, temperature, flow rates, and odorant concentrations on the efficiency of selected reagents for odor removal, and the mechanism of the scrubbing processes are being studied. Gas liquid equilibrium, mass transfer rates and water pollution potential related to scrubber development will be investigated. The project was started in April, 1969 and will be continued through 1976 in support of related wet scrubber development for odor control.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Belur N. Murthy

Belur N. Murthy

PROFESSIONAL SCHOOL (medical, graduate, etc.) RLB, CSD

(A) Dates of current project authorization: 7/72 through 6/73
(B) Annual level of effort in dollars: $15,000
(C) Multiple Funding: None
(D) I. D. Number: 21 AFB 02

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT:

Odor Removal from Air by Adsorption on Charcoal

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Prof. B. G. Kyle, Department of Chemical Engineering, Principal Investigator
Prof. N. D. Eckoff, Department of Nuclear Engineering, Associate Investigator

NAME AND ADDRESS OF INSTITUTION:

Kansas State University
Department of Chemical Engineering
Manhattan, Kansas 66506

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The capacity and rate of adsorption of low concentrations less than 100 ppm of odorous compounds from air on various charcoal adsorbents are studied in a fixed bed adsorption apparatus. Gas mixtures of desired composition are prepared from diffusion tubes and are analyzed by gas chromatograph. Parameters studied include temperature, bed height, flow rate, gas concentration, and type of adsorbent. Studies with ethyl mercaptan indicated catalytic oxidation at room temperature. Adsorption capacity of acetaldehyde was found to depend on bed height below four inches. Solid-phase diffusional resistance was found to be the rate controlling step for aldehyde adsorption. Further studies on the kinetics and mechanism of adsorption leading to the design of efficient sorption devices for odor control for a wide variety of sources are in progress. This project was started in September, 1970 and is expected to continue through September, 1973.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Belur N. Murthy

PROFESSIONAL SCHOOL (medical, graduate, etc.) Belur N. Murthy
Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 7/72 - 9/73
(B) Annual level of effort in dollars: $ 16,000
(C) Multiple Funding: None
(D) I. D. Number: 21 AFB 03

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring, EPA

TITLE OF PROJECT:
Investigation of Odor Control in the Rendering Industry

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. D. M. Doty, Technical Director, Fats and Proteins Research Foundation, Inc.
Dr. R. H. Snow, Senior Engineer, Analytical Systems Research, IIT Research Institute

NAME AND ADDRESS OF INSTITUTION:
Fats and Proteins Research Foundation, Inc.
2720 Des Plaines Avenue
Des Plaines, Illinois 60018

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The cost and effectiveness of various odor control methods applicable to the rendering industry were compared by computer calculations. Design analysis and comparison of the cost for equaleffectiveness indicated that wet scrubbers were most promising for further experimental investigation and development. Gas chromatographic analysis was used to identify odorous components in rendering plant emissions. Scrubbing tests were conducted with a packed column to select the aqueous reagents and to study the mass transfer characteristics for absorption of the identified odorous compounds in the concentration range encountered in the rendering plant emissions. Further tests will be conducted to optimize the scrubber system design, operating conditions, and selection of aqueous reagents.

This project started in April, 1972 and is expected to be completed by October, 1973.

METHOD OF SUPPORT (CHECK ONE)
☐ INTRAMURAL
☒ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Belur N. Murthy

PROFESSIONAL SCHOOL (medical, graduate, etc.) Belur N. Murthy
Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: 4/72 - 10/72
(B) Annual level of effort in dollars: $ 115,000
(C) Multiple Funding: $55,000 by FPRF; 60,000 EPA
(d) I. D. Number: 21 AFB 04

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division, Office of Research & Monitoring, EPA

TITLE OF PROJECT:

Incinerator Overfire Mixing Demonstration

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. T. J. Lamb, Chemical Engineering Section, Project Director
Dr. Richard Stevens, Chemical Engineering Section, Project Coordinator, Staff Engineer
Dr. Phillip Levins, Analytical Chemistry Section, Test & Analysis Leader

NAME AND ADDRESS OF INSTITUTION:
Arthur D. Little, Inc.
20 Acorn Park
Cambridge, Mass. 02140

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Combustible particulate and gases emitted from municipal incinerators result primarily from inadequate combustion chamber turbulence and stratification in the gas flow. Studies are being conducted at a municipal incinerator to define the effects of operating variables and overfire mixing on refuse bed combustion, combustion chamber gas flow and furnace emissions.

The end result of the study is to be the development of overfire mixing design and operating parameters which minimize combustible emissions. Bed burning, jet mixing and furnace gas flow models are being developed to aid in establishment of the overfire mixing design guidelines.

METHOD OF SUPPORT (CHECK ONE)
☐ INTRAMURAL
☒ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: J D Kilgroe

PROFESSIONAL SCHOOL (medical, graduate, etc.): Project Officer, CSD
(Supporting Agency)

A. June 1971 to March 1973
B. Total Contract $219,408
C. Jointly funded by: Solid Waste Research Division (OR&M) - $84,000
    and Control Systems Division - $135,408
D. 21 AFE - 15

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Control Systems Division
Office of Research & Monitoring

TITLE OF PROJECT: Cost-Effectiveness of Techniques for Process Feed & Product Analysis

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. John K. Taylor, Chief, Microchemical Analysis, Analytical Chemistry Division

NAME AND ADDRESS OF INSTITUTION:

National Bureau of Standards, Department of Commerce, Washington, D. C.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to evaluate the cost and applicability of analytical methods to the analysis of elements as they occur in the various streams associated with air pollution control equipment. These streams include feedstocks such as fossil-fuels, metal ores and metal alloys and product streams including flyash, scrubber scurries, metal processing intermediates and incinerator residues. The study will utilize the expertise of the NBS to develop a matrix of analytical techniques which includes estimates of detection limit, accuracy, precision, selectivity, equipment cost and cost per analysis. All techniques for which commercially available laboratory instrumentation exists will be considered. This includes ion-probe and electron-probe spectrometry, spark source mass spectroscopy, neutron activation analysis and the more widely available techniques such as IR, AA, UV and XRF. Project initiation was June, 1972 and completion of the initial phase is December, 1972.

METHOD OF SUPPORT (CHECK ONE)
___ INTRAMURAL
___ CONTRACT
___ GRANT
_X_ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Frank E. Briden

PROFESSIONAL SCHOOL (medical, graduate, etc.) Frank E. Briden
Project Officer, CSD
(Supporting Agency)

(A) Dates of current project authorization: June, 1972 - December, 1972
(B) Annual level of effort in dollars: $50,000
(C) Multiple Funding: None
(D) I. D. Number: 21 AFC 05

DIVISION OF CHEMISTRY AND PHYSICS

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SI-SIE-T8A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
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SIE NO.

AGENCY NO. 800167

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Evaluation of a New "Cryogenic Sampler" for Field Use

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Reinhold A. Rasmussen - 010-28-5755 - Assoc. Plant Physiologist, Air Pollution Res. Section
Elmer Robinson - Professor of Meteorology, Air Pollution Research Section
Michael Holdren - 251-84-0582 - Research Assistant, Air Pollution Research Section

NAME AND ADDRESS OF INSTITUTION:
Washington State University
Pullman, Washington 99163

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The first objective is to further improve the performance of the cryocondensers developed for the field collection and concentration of atmospheric trace hydrocarbons to maximize field utility, collection precision and component identification.

The second objective is to separate the collected trace organics into four fractions; 1. methane; 2. light hydrocarbon fraction C_2 to C_4; 3. intermediate C_5 to C_8 fraction including isoprene; and 4. the aromatic and terpene fraction C_7 to C_{10}. The necessity of this objective is indicated by the observation that plant foliages emit many more compounds to the atmosphere than isoprene and terpenes. These studies will yield an increase in sensitivity, accuracy of component identification and also provide a balanced quantitative analysis of atmospheric C_1 to C_{10} compounds.

The third objective is to improve the gas chromatographic analysis of the trace atmospheric organics collected. To achieve this objective, greater resolution of the numerous peaks (10 to 60) presently separated by packed column analyses of rural and recreational atmospheres must be obtained for more precise identification of these peaks.

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
__ CONTRACT
X GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

Project Period 6/1/72 - 5/30/74
Budget Period 6/1/72 - 5/30/73
Annual Effort $38,454
Multiple Funding
I.D. Number 26ACX FY 1972 Funded

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SI-SIE-70 A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800792

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

New Analytical Methods for Sulfur Dioxide

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Lambert, Jack L., 496-01-6666, Professor of Chemistry, Dept. of Chemistry

(to be named) Graduate Research Assistant

NAME AND ADDRESS OF INSTITUTION:
Kansas State University
Manhattan, Kansas 66502

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this research is the development of several new types of analytical reagents for sulfur dioxide in air. We have found a class of compounds exemplified by 2.5-dimercapto-1,3,4-thiadiazole and related anions that is selective as colorimetric or piezoelectric reagents. The reaction is reversible and releases sulfur dioxide slowly at room temperature from either the solid compounds or their solutions, or rapidly at elevated temperatures. The gain in mass of the reagent on a quartz oscillator crystal changes the frequency of that crystal in relation a reference crystal. The frequency change can serve as the basis for telemetry. The reversibility of the reaction makes the reagent self-renewing.

Compounds formed between certain triphenylmethane dye cations and azo dye anions supported on alumina show promise as cumulative reagents for passive monitoring. One such compound undergoes permanent change in color upon exposure to sulfur dioxide. Another changes color reversibility and would be self-renewing. The low solubility of a third type provides a reagent solution of reproducible concentration containing as an internal colormetric standard the non-reactive azo dye anion. Salts of oxohydroxobis(8-hydroxyquinolino)vanadium(V) have been found to respond non-selectively to sulfur dioxide and other acid producing gases with change in color from yellow to intense black.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
x GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

Project Period	9/1/72 - 8/31/73
Budget Period	9/1/72 - 8/31/73
Annual Effort	$25,000
Multiple Funding	
I.D. Number	26 ACX-17

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801120

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Photochemistry of Substances Present in Urban Air

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Harold S. Johnston, Director, Prof. of Chem. 256-14-1518
Erwin Marti, Post-doctoral Research Chemist
Thomas Paukert, Graduate Student
George Wu, Graduate Student
Earl Morris, Graduate Student

NAME AND ADDRESS OF INSTITUTION:
University of California
Berkeley, California 94720

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Photochemical reactions are initiated by absorption of visible or ultraviolet radiation and occur, typically, as a series of chemical reactions involving free radical, atomic, or other unstable intermediate species. The understanding of a photochemical reaction requires the identification of these chemical steps and the highly reactive intermediates. For simple photochemical reactions, the mechanism in terms of steps and species can be deduced from kinetic measurements of rates of formation of all products. However, for reactions of only moderate complexity, a kinetic study of reactants and products is insufficient. We must observe the intermediates and measure their lifetimes in order to understand complex photochemical reactions. Our research goal is to develop spectroscopic and mass spectroscopic methods of direct observations of free radical intermediates - at very low concentrations - in order to clarify the mechanism of photochemical reactions.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT*
X GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

Project Period	*5/1/68 - 4/30/73*
Budget Period	*5/1/72 - 4/30/73*
Annual Effort	*$45,000*
Multiple Funding	
I.D. Number	*AAD-12*

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800805

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Remote Detection of Atmospheric Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

William Hayden Smith, Res. Physicist, SS # 406-52-2023, Astrophysical Sciences
Joachim Born, Engrg. Assoc., 099-30-3794, Astrophysical Sciences
Research Associate, un-named
Electronic Technician, un-named

NAME AND ADDRESS OF INSTITUTION:

Princeton University Observatory
Princeton, New Jersey 08540

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Raman scattering from atmospheric molecules may be detected remotely using the sampling technique devised by us. The use of a Fabry-Perot interferometer allows the gain in signal to be more than ten thousand over usual methods. Concentration down to tens of parts per million of gases should be detectable at ranges exceeding 0.5 km. The technique has the advantages of low cost of the sampling apparatus, stability of the instrument, readout in a form that is directly a function of the molecular concentration and temperature, and that requires no spectroscopic knowledge on the part of the operator. The apparatus is small and easily portable and can be used with optics of modest quality for light collection.

The technique will also be extended to the use of fluorescence spectra for molecular species. In addition to the value for atmospheric pollutant detection, the method will be powerful in the study of molecular spectra for the determination of rotational constants, and vibrational interaction constants such as the Fermi-Resonance interaction matrix elements which cannot be obtained so easily or as accurately by other methods of spectroscopy. These results are natural offshoots of the proposed research program.

METHOD OF SUPPORT (CHECK ONE)

☐ INTRAMURAL
☐ CONTRACT
☒ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

Project Period	*3/1/72 - 2/28/75*
Budget Period	*3/1/72 - 2/28/73*
Annual Effort	*$64,615*
Multiple Funding	
I.D. Number	*AAP-28*

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.
800869

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development of Air Sampling Methodology

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Saltzman, Bernard E., 069-16-2502, Prof. of Env. Health, Dept. of Env. Health
Burg, Wm. R., 710-12-6690, Sr. Res. Assoc., Dept. of Env. Health
Cuddeback, John E., 582-72-4758, Res. Assoc., Dept. of Env. Health
Younker, Waldo, 283-40-7566, Instrument Spec., Dept. of Env. Health

NAME AND ADDRESS OF INSTITUTION:
College of Medicine
University of Cincinnati, Cincinnati, Ohio 45219

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this project is to examine critically and to improve the present technology for air sampling and analysis. Attention will be focussed on the application of newly developed instrumental systems and detectors to utilize their capabilities for improved separations and for high sensitivities in the nanogram range. (Solid absorbent reagents will be sought for convenient and stable sample collection. Either the test substance or a characteristic reaction product will be liberated for analysis and determined with an instrumental system). Basic theoretical relationships will be developed for sampling parameters.

Practical applications for more sensitive and specific analytical methods will be sought to meet the needs of air quality standards, and for non-urban background studies. Simplifications, multiple pollutant procedures, and improved means for calibration, standardization and automation of these systems will be developed.

METHOD OF SUPPORT (CHECK ONE)
- ☐ INTRAMURAL
- ☐ CONTRACT
- ☒ GRANT
- ☐ INTERAGENCY AGREEMENT
- ☐ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________

Project Period	3/1/72 - 2/28/75
Budget Period	3/1/72 - 2/28/73
Annual Effort	$37,185
Multiple Funding	
I.D. Number	ACX -37

SI-SIE-7A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800984

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

An Investigation of Gas Phase Ozonolysis Rates

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

David C. Williamson - 566-60-5732 - Assistant Professor - Chemistry

NAME AND ADDRESS OF INSTITUTION:
California State Polytechnic College
San Luis Obispo, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Large discrepancies exist for second order rate constants for the reaction of ozone with internal olefins. Rate constants determined at reactant concentrations of microatmospheres differ appreciably from those determined at milliatmospheres. It is proposed to remove these discrepancies by measuring the second order rate constants from microatmosphere concentrations to milliatmosphere concentrations using the same experimental method. It is proposed, as well, to quantitatively measure the reactivity of aldehydes and ketones with ozone in the gas phase. Evidence for chemi-decomposition of ozone will be sought.

A gas phase "stopped flow" apparatus will be constructed to perform the proposed research. Ozone concentrations will be measured by a multiple-reflection light absorption apparatus. From the time-decay curves of ozone concentration, second order rate constants can be calculated.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

X GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ______

Project Period	*6/1/72 - 5/30/75*
Budget Period	*6/1/72 - 5/31/73*
Annual Effort	*$6,950*
Multiple Funding	
I.D. Number	*AAD-19*

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Develop Methods for Sampling and Characterizing Non-Exhaust Particulate Emissions from Mobile Sources

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. J. B. Moran, Chief, Engineering Support & Sampling Studies Section, SEMM Branch,
Mr. J. L. Miller, electron microscopist, ESSS Section, SEMM Branch,
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Study consists of the design and development of techniques for obtaining representative samples of particulate matter emitted to the atmosphere from mobile sources through processes other than combustion of fuels. Initial effort will be devoted to the sampling of particulate emissions resulting from tire and brake wear from light duty vehicles. Particulate matter sampled will be characterized by electron optical techniques as well as various chemical analytical procedures. Work began in FY 72 and is expected to continue through FY 77.

METHOD OF SUPPORT (CHECK ONE)
x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John Moran gje

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $8,400
C. N.A.
D. ROAP 26ACV, Task 17

SI-SIE-76A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Methods for Aircraft Turbine Emissions Characterization

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. J. B. Moran, Chief, ESSS Section, SEMM Branch,
Mr. J. L. Miller, Electron Microscopist, ESSS Section, SEMM Branch,
Mr. J. Sigsby, Chief, MSEMM Section, SEMM Branch,
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Project consists of the development of sampling and analytical procedures for measurement of mass, particle size distribution and composition of particulate emissions from aircraft turbine engines. Initial studies include experiments conducted with engines at a test stand through special arrangements with the Navy Department, and sampling of emissions from jet aircraft during start-up, taxi, and take-off using a specially equipped sampling vehicle. Work begins in FY 73 and is expected to continue through FY 77.

METHOD OF SUPPORT (CHECK ONE)
x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John Moran /gjc

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $11,200
C. N.A.
D. ROAP 26ACV, Task 19

SI-SIE-16A, REV 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Develop Measurement Techniques for Freon Emissions as Stable Tracers of St. Louis Air Mass

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Arthur Coleman, Research Chemist
Mr. Robert K. Stevens, Supv. Research Chemist
Field Methods Development Section, Air Quality Measurement Methods Branch, Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:
Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

An improved gas chromatographic system will be developed to separate the non-toxic freons and measure them at concentrations as low as 1 part in 10^{14}. The system will utilize a new mode of operation of an electron capture detector equipped with a Ni-63 radiation source.

This new analyzer separates the freons to be used in tracer studies in less than 5 minutes and eliminates interference due to trace concentrations of SF_6 and low molecular weight hydrocarbons.

METHOD OF SUPPORT (CHECK ONE)
_X INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Arthur S. Coleman

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $6,000
C. N/A
D. ROAP 56AAT, Task 16

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Liaison with Other Interested Technical Groups Both Within (NEEC) and Without EPA (SAE, ISC, etc)

Give names, departments, and official titles : PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

John E. Sigsby, Jr. Chief,
Ronald Bradow, Research Chemist
Donald Klosterman, Research Chemist
Mobile Source Emission Measurements Section
Francis M. Black, Chemist, Engineering Support and Sampling Studies Section,
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Interact with viable, responsible groups with the demonstrated responsibility for providing communication and standardization in mobile source programs. Particular attention is made to maintaining coordination with other mobile source programs through providing, demonstrating, and implementing new techniques as needed to other mobile source programs. Technical liaison is provided to technically responsible groups which provide engineering liaison to the industry, such as SAE subcommittees, APRAC, etc. Some liaison with associated technical groups as time and are available - ASTM-P2, E-9, etc.

Project initiated 7/72; anticipated completion date 6/73

METHOD OF SUPPORT (CHECK ONE)

__x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____

A. 7/72 - 6/73
B. $125,000
C. N/A
D. ROAP 26ACV, Task 02

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Fabrication of a Multi-Stage Aerosol Impactor

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Thomas P. Roth
Mr. Neil Hill
Mr. Carl Ericson
Mr. Robert K. Stevens, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Anoerson 2000 Inc., P. O. Box 20769, Atlanta, Georgia 30320

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Contractor shall provide a multi-state impactor for the sampling of sub-micron atmospheric aerosols.

The instrument shall meet the following criteria:

1. The device shall employ a multi-jet cascade impactor principle with 5 stages operated at atmospheric pressure and 3 stages (plus an after filter) at a reduced pressure of 1/30 atmosphere. Impaction velocity will all be less than 3100 cm/sec. thereby minimizing particle bounce and re-entrainment.
2. The device shall be able to collect particle in the following ranges:

    0.05 - 0.12 microns
    0.12 - 0.3 microns
    0.3 - 0.6 microns
    0.6 - 1.2 microns
    1.2 - 2.5 microns
    2.5 - 5.0 microns
    5.0 -10.0 microns

Period of Performance: 6-20-72 - 3-19-73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT No. 68-02-0563
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 6/72 - 3/73
B. $27,983
C. N/A
D. ROAP 26AEK , TASK N/A FY 1972 Funded

SI-SIE-7AA, REV 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency, NERC, Div: of Chemistry and Physics

TITLE OF PROJECT: Field Fvaluation of Bendix Spectrometer as Remote Stack Emission Measuring instrument

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. M. Barnes, Jr., Research Chemist, Stationary Source Emission Measurements Section, Source Emissions Measurement Methods Branch, Div. of Chemistry and Physics.

Mr. R. Rollins, Electronics Engineer, Stationary Source Emission Measurements Section, Source Emissions Measurement Methods Branch, Div. of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: Environmental Protection Agency, National Environmental Research Center, Div. of Chemistry & Physics, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Bendix instrument is a telespectral radiometer with a 10 cm^{-1} resolution over the 8-14 μ spectral region. It is possible to use this instrument in the double ended absorption mode or the passive, single ended emission mode. The spectrometer will be used to study parameters important in the design considerations of a smaller, dedicated IR emission remote sensor for a particular stack pollutant, e.g., SO_2.

Project initiated 9/1/70; anticipated completion date 6/30/74.

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Dr. H. M. Barnes (JBN)

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/1/72 to 6/30/73
B. $16,800
C. N/A
D. ROAP 26AAP Task 32

SI-SIE-14A, REV 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Field Studies of Barringer Correlation Unit as Area Monitor

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.
Dr. H. M. Barnes, Jr., Research Chemist
Mr. Roosevelt Rollins, Electronics Engineer
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:
Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Barringer correlation spectrometer can be used as a mobile overburden mapping instrument for extended sources such as oil refineries, etc. Parameters such as light level, moisture (humidity), wind velocity, etc. will be studied in the course of the investigation. Correlation with in-situ monitoring will be attempted where possible.

Project initiated 7/72; anticipated completion date 6/73.

ETHOD OF SUPPORT (CHECK ONE)
_x INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Dr. H M. Barnes (gw)

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $8,400
C. N/A
D. ROAP 26 AAP, Task 54

SI SIE-25A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Develop Improved Instrumental Method (e.g. Fluorescent Excitation) for NO_2

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. William A. McClenny, Research Physicist
John P. Bell, Chemist
Dr. Jimmie A. Hodgeson, Research Chemist
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Fluorescence from a gas can be caused to occur by excitation at a wavelength in the characteristic absorption regions of the spectra followed by the emission at wavelengths equal to or longer than the exciting wavelength. The use of a fluorescent measurement for the detection of trace gases depends on the energy per wavelength interval available from the excitation source and on the reduction of spurious radiation at the position of the detector of fluorescence. Since radiation at the excitation wavelength which is scattered into the detector constitutes a spurious signal, these two requirements are mutually exclusive unless the scattered radiation is reduced by filtering or by elimination of scattering surfaces.

The objective of the present program is to use an inexpensive dye laser to excite fluorescence in NO_2. The high energy per wavelength interval of a laser source as compared to a broadband source and the output beam collimation are ideal features for an exciting source. The laser beam passes through a chamber maintained at reduced pressures and a photomultiplier tube is mounted perpendicular to the axis of the beam in order to collect fluorescent photons at wavelengths longer than that of the source.

Project initiated September, 1971; anticipated completion date September, 1973.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William A. McClenny

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $30,000
C. N/A
D. ROAP 26 ACX, Task 07

SI-SIE-10A, REV. 6-64

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Synthesis of Trifluoromethyl Sulphur Pentafluoride (CF_3 SF_5)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Edward A. Tyczkowski, Project Director
Andrew E. O'Keeffe, Project Officer
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

Marvin F. Mayer, Bio Lab Technician
[illegible], Chemist
[illegible], Research Chemist

NAME AND ADDRESS OF INSTITUTION:
Armageddon Chemical Company, 431 Salem Street, Durham, North Carolina 27703

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

EPA has, since 1964, performed pioneer work in the development and utilization of meteorological tracers. A meteorological tracer is a gas which can be released into the atmosphere for eventual capture and analysis at a downward location for the purpose of experimentally establishing the transport of gases under the influence of wind and other meteorological parameters. To be acceptable for such use, a gas must be (a) Physiologically inert, (b) Chemically inert, (c) Susceptible to precise measurement at extreme (10^{-12} to 10^{-15}) dilutions in air, and (d) Essentially absent from the normal atmosphere. Historically, sulfur hexafluoride (SF_6) has been a preferred meteorological tracer but, because of the escape of sizeable amounts to the atmosphere incident to certain industrial uses, is rapidly becoming less attractive. (Its concentration in the global atmosphere has increased from about 10^{-15} to 10^{-13} during the period from 1965 to 1971).

Among substances considered as acceptable replacements for SF_6 is CF_3SF_5 with which to determine its potential as a meteorological tracer through experimental use. The same procurement will also serve to establish a source of supply against possible future needs.

Period of Performance: August 24, 1972 – August 23, 1973

METHOD OF SUPPORT (CHECK ONE)

_ INTRAMURAL
X CONTRACT 68-02-0680
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 8/72 - 8/73
B: $35,176
C. N/A
D. ROAP 26ACX FY 1972 Funded

SI-SIE-38A, REV 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development of Methodology to Determine Organic Composition of Particulates

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Eugene Sawicki, Chief	Marvin F. Guyer, Bio Lab Technician
Laboratory Measurements Research Section	James E. Meeker, Chemist
Air Quality Measurement Methods Branch	James D. Mulik, Research Chemist
Division of Chemistry and Physics	Eva Wittgenstein, Research Chemist

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This task consists of the development of methods and instruments for the analysis of acids, bases, polynuclear arenes, aliphatic hydrocarbons, unsaturated aliphatic hydrocarbons, carbohydrates, proteins, total organics, etc. In addition, methodology and instrumentation are to be developed for the characterization and determination of physiologically active compounds. Another problem under investigation is the composition of the aerosol found in various types of wilderness, urban, non-urban, and industrial atmospheres.

Project initiated July, 1972; anticipated completion date June, 1977.

METHOD OF SUPPORT (CHECK ONE)

_x INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Eugene Sawicki

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $21,000
C. N/A
D. ROAP 26 AEK, Task 29

SI-SIE-16A, REV 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Factors Affecting Reactions in Environmental Chambers

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.
R. J. Jaffe, Research Specialist, Project Director; E. H. Kawasaki, Research Specialist; F. C. Waite, Research Specialist; R. C. Tuttle, Senior Scientist; F. C. Smith, Associate Engineer; R. W. Joy, Design Specialist; F. Kopernik, Research Lab Analyst; G. F. O'Keeffe, Research Lab Analyst; K. W. Last, Staff Specialist; J. R. Grammer, Sr. Scientist; Biotechnology Organization, Space Systems Division, Lockheed Missiles and Space Company. S. L. Kopczynski, Supervisory Research Chemist, Gas Photochemistry and Kinetics Research Section, Atmospheric Chemistry and Physics Branch, Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:
Lockheed Missiles and Space Company, Inc., Sunnyvale, California 94088

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A program will be directed toward delineating the effects of variations in the environmental chamber and radiation characteristics on the propylene/NO_x photochemical reaction system. The study will be carried out in a 66 ft^3 environmental chamber constructed of pyrex glass and teflon coated aluminum extrusions. The chamber will be illuminated with a collimated beam of light from a solar illumination simulator consisting of a xenon arc lamp and optical system. The effects of surface materials, surface-to-volume ratios, chamber cleaning technique and incident radiation spectral distribution will be examined.

Surface materials to be investigated are aluminum, Pyrex, stainless steel, and Teflon film. Chamber cleaning techniques will involve vacuum punp-out and heated air purge. The following species will be analyzed: nitric oxide, nitrogen dioxide, ozone, propylene, acetaldehyde, and peroxyocetyl nitrate.

Period of Performance: 6/29/72 - 8/28/73

ETHOD OF SUPPORT (CHECK ONE)
_ INTRAMURAL
_x CONTRACT 68-02-0287
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 6/72 - 8/73
B. $33,000
C. EPA - $33,000, Coordinating Research Council - $100,000
D. ROAP 26AAD FY 1972 Funded

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Fabrication And Testing Of Prototype Monitor For NO_2 and NH_3

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. A. Hodgeson, Rsch Chemist	Field Methods Development Section
W. A. McClenny, Rsch Physicist	(Instrument Development Unit)
J. P. Bell, Chemist	Air Quality Measurement Methods Branch
K. A. Rehme, Chemist	Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Res. Center, Res. Tri. Park, NC

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary objectives of this work are to provide an improved method for the direct measurement of NO_2 and a technique for trace concentrations (<10 ppb) of atmospheric NH_3. Current chemiluminescent methods for NO_2 are indirect in that an external conversion of NO_2 to NO is required; the electronics are complicated by the requirement for this differential measurement. Measurement of NH_3 would be of value in studies such as RAPS, in which the role of NH_3 in pollutant transformations is to be determined. In order to provide these prototypes, two chemiluminescent approaches appear most feasible. NO_2 can be detected by a photofragment technique which gives a direct read-out in terms of concentration. NO_2 on entering the detector is photolyzed to provide oxygen atoms which are detected by their chemiluminescent reaction with added NO. An appropriate filter-photomultiplier combination can be used to remove the O_3 interference. Alternatively, with a different filter-photomultiplier combination, the same detector can provide a direct read-out of NO_2 and O_3. The most attractive procedure for NH_3 at present is a thermal conversion to NO, and detection of NO by conventional O_3 + NO chemiluminescence. Both these approaches for NO_2 and NH_3 have been demonstrated on the bench-scale and atmospheric measurements have been made. Some final optimization of instrument parameters remain. Finally portable prototypes will be constructed which will be evaluated in the field.

Project initiated 7/72; anticipated completion date 6/73.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J. A. Hodgeson

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $30,000
C. N/A
D. ROAP ID No. 26ACX, Task 08

SI-SIE-10A, REV 8-68

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Adaptation and Evaluation of Odor Measurement Techniques to Various Odor Sources

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Richard A. Duffee, Project Director

Mr. John S. Nader, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:
TRC-The Research Corporation of New England, 125 Silas Deane Highway, Wethersfield, Conn.

SUMMARY OF PROPOSED WORK – (200 w s or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supportin esearch, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to adapt and evaluate the odorant concentration to odorant threshold ratio method for application to various odor source industries. The adaptation of the technique requires a study of the odor panel selection, sample collection and presentation for each odor source specified followed by evaluation of the technique applied to the specified odor source under field conditions. In addition, each odor industry is to be evaluated to determine if a particular chemical constituent can be identified as the principal contributor to the odor concentration.

For each odor source catagory listed, the contractor shall include but not be limited to the following tasks which shall be performed within the limits of the level of effort specified in Article III of the Special Provisions.

Period of Performance: 8/24/72 - 8/24/73

METHOD OF SUPPORT (CHECK ONE)
☐ INTRAMURAL
☒ CONTRACT 68-02-0662
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72 - 6/73
B. $94,027
C. N/A
D. ROAP 26AAP, Task 12

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of Energy Dispersive X-Ray Fluorescent Analyzer

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Fred L. Goulding, Project Director, Lawrence Radiation Laboratory
Dr. Thomas G. Dzubay, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: Lawrence Radiation Laboratory, U.S. Atomic Energy Commission, Berkeley, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Design, fabricate and test a prototype energy-dispersive x-ray fluorescent analyzer to determine the elemental composition of particulate matter collected on special collection surfaces. System will employ mini-computor to process signals from the lituim drifted detector and record concentration in ugm/m^3 over time period of collection. Up to 30 elements can be analyzed with the instrument. A special sample collecting device will be fabricated as part of the program which will be compatible with the design of the analyzer.

Period of Performance 12/2/71 to 12/1/72

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
__ CONTRACT
__ GRANT
xx INTERAGENCY AGREEMENT EPA-1AG-0089(D)
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 12/71 - 12/72
B. $110,000
C. N/A
D. ROAP 26AEK Task N/A FY 1972 funded

SI-SIE-10A, REV 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of Energy Dispersive X-Ray Fluorescent Analyzer

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Fred L. Goulding, Project Director, Lawrence Radiation Laboratory
Dr. Thomas G. Dzubay, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: Lawrence Radiation Laboratory, U.S. Atomic Energy Commission, Berkeley, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Design, fabricate and test a prototype energy-dispersive x-ray fluorescent analyzer to determine the elemental composition of particulate matter collected on special collection surfaces. System will employ mini-computor to process signals from the lituim drifted detector and record concentration in ugm/m^3 over time period of collection. Up to 30 elements can be analyzed with the instrument. A special sample collecting device will be fabricated as part of the program which will be compatible with the design of the analyzer.

Period of Performance 12/2/71 to 12/1/72

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
__ CONTRACT
__ GRANT
xx INTERAGENCY AGREEMENT EPA-1AG-0089(D)
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______________________

A. 12/71 - 12/72
B. $110,000
C. N/A
D. ROAP 26AEK Task N/A FY 1972 funded

SI-SIE-78A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Develop and Evaluate Optical Method to Measure Formaldehyde

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. A. Hodgeson, Research Chemist
W. A. McClenny, Research Physicist
K. A. Rehme, Chemist
B. E. Martin, Chemist
Field Methods Developmetn Section, Air Quality Measurement Methods Branch, Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:
Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

At present, no suitable instrumental method is available for the measurement of atmospheric formaldehyde. Formaldehyde is an pollutant which photolyzes in solar radiation to yield reactive atomic and molecular fragments which may be important in photochemical smog reactions. Task No. 26, ROAP 26ACX, Program Element 1A1010 ("Development of Detection Methods for Acid Gases and Halides") is a general program to explore promising new spectroscopic techniques (e.g. Chemiluminescence) for the detection of various pollutants. Task 26 will identify the most promising scheme for the further development in this task. Two of the promising techniques tentatively identified are the photofragment detection of formaldehyde (photolysis and chemiluminescent detection of H atoms) or the direct chemiluminescent detection of formaldehyde with O atoms. This task will pursue the development of these techniques by the fabrication and evaluation of laboratory breadboard detectors and by the fabrication and evaluation of a prototype field monitor.

Project to be initiated 1/73; anticipated completion date 1/74

METHOD OF SUPPORT (CHECK ONE)
x INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J. A. Hodgson

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 1/73 - 1/74
B. $11,000
C. N/A
D. ROAP 56AA1, Task 13

SI-SIE-78A, REV 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development of a Prototype Sulfuric Acid Monitor

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. L. W. Richards, Project Director, NRC

Mr. Robert K. Stevens, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

National Research Corporation, 70 Memorial Drive, Cambridge, Mass. 02142

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Contractor shall design, develop, fabricate, test and deliver a portable device which will monitor sulfuric acid in ambient air.

The Contractor shall design the sulfuric acid monitor to meet the following criteria:

1. The monitor shall be portable, however this does not imply that the monitor necessarily be one unit.
2. The monitor shall be capable of measuring between 10 ug/m^3 and 1000 ug/m^3 of sulfuric aerosol.
3. The response time of the instrument shall be less than five (5) minutes.
4. The response of the instrument shall not be affected by SO_2, NO_2, or sulfate salts.
5. Inasmuch as acids other than H_2SO_4 may be present in the atmosphere (i.e. HCL, HNO_3, etc.) the instrument shall be capable of discriminating $H_2 SO_4$ from other acids.

Period of Performance: 9/21/72 - 9/20/73

METHOD OF SUPPORT (CHECK ONE)

_ INTRAMURAL

X CONTRACT 68-02-0592

_ GRANT

_ INTERAGENCY AGREEMENT

_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

A. 7/72 - 6/73
B. $61,391
C. N/A
D. ROAP 26AEK, Task N/A FY 72 Funded

SI-SIE-38A, REV 6-66

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development of Chemiluminescent Detection Method(s) for Acid Gases and Aldehydes

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. A. Hodgson, Research Chemist
W. A. McClenny, Research Physicist
B.E. Martin, Chemist
J. P. Bell, Chemist
Field Methods Development Section
(Instrument Development Unit)

Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

At present, no suitable instrumental methods are available for pollutants such as nitric acid (HNO_3), nitrous acid (HONO), halide acids (HCl, HF), and aldehydes, particularly formaldehyde. The acid gases are important because these are noxious pollutants in themselves. Formaldehyde is an intense lachrymator and furthermore may photolyze in solar radiation to yield reactive fragments which may play a role in photochemical smog chemistry. The primary objective of this task is to explore promising spectroscopic approaches for detection of these pollutants. These will involve chemiluminescent and photofragment detection schemes. For example, thermal and photolytic conversion of HNO_3 and HNO_2 to NO and subsequent chemiluminescent detection of NO will be examined. A photofragment technique will be tested for formaldehyde, in which photolysis is followed by detection of the resultant H atom by chemiluminescence. The hydrogen halides may also be detectable by photofragment techniques. In addition, many of these species undergo direct chemiluminescent reactions with reactive atomic species such as O, N, and H atoms. The spectra of such emissions will be scanned to determine their utility in a detection scheme. The output of this task is the identification and initial evaluation of the most promising detection schemes for further development in an ensuing task.

Project initiated 7/72, anticipated completion date 6/73.

ETHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J. A. Hodgson

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 7/72 - 6/73
B. $36,000
C. N/A
D. ROAP 26ACX, Task 26

SI-SIE-78A; REV. 6-61

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800971

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Mechanical Engineering Department, University of Minnesota, Minneapolis, Minnesota 55455

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Kenneth T. Whitby, 389-22-7931, Professor, Department of Mechanical Engineering
Virgil A. Marple, 477-44-3977, Assistant Professor, Mechanical Engineering Dept.
William Clark, 469-46-4138, Research Associate, Mechanical Engineering Dept.

TITLE OF PROJECT

Sampling and Analysis of Atmospheric Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The basic objective of this research is to modernize, extend, further develop and utilize an already existing capability for the measurement of atmospheric aerosols, to apply this in the field in collaboration with other investigators and to increase our analysis, interpretation and publication efforts using existing data.

The specific objectives are as follows:

1. Purchase remaining essential components of Portable Minnesota Aerosol Analyzing System and operate it for the first time in California during the fall of 1972 in conjunction with the ARB project.
2. Purchase a new minicomputer data acquisition system for delivery in late 1972 or early 1973 for interfacing with existing instruments and operational field use in St. Louis during 1973 or 1974.
3. Increase level of data analysis and interpretation work on available data. New data presentation, analysis forms and concepts will be used in this work.
4. Obtain a surplus trailer from EPA and outfit it for field use by late summer or fall 1973.
5. Purchase atmospheric concentration level gas analysis equipment for O_3, NO_x total and non methane HC, CO and SO_2. These instruments will be used in the atmospheric field research and to support the EPA-CRC smog aerosol research project which has no equipment funds.
6. In addition to field collaborative research mentioned in 2 & 4 above it is planned to use the mobile laboratory and the portable MAAS to study source ambient aerosol relationships in the Minneapolis-St. Paul area.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT _✓_ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD	6-1-72	5-31-75
BUDGET PERIOD	6-1-72	5-31-73
ANNUAL EFFORT	$75,060	
MULTIPLE FUNDING	—	
I.D. NUMBER	56 AA1 - FY 72 Funded	

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Complete Laboratory Testing of NO, NO_x Monitor

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

B. E. Martin, Chemist
K. A. Rehme, Chemist
J. A. Hodgeson, Research Chemist
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Res. Center, Res. Tri. Park, NC

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The instrumental technique for oxides of nitrogen which has proven most successful in field applications employs the chemiluminescent detection of NO with excess O_3. NO_2 is measured differentially after a thermal conversion to NO. Following the initial development by EPA, several instrument companies are providing commercial versions of this detector. These commercial units are just now being employed widely by various Federal, State and local agencies. Because of the accumulation of data which will ensue from such instruments, it is vitally important that all questions on instrument performance or potential problems be thoroughly investigated in the laboratory. Two areas of continuing investigation are in the thermal conversion step of NO_2 to NO and a study of potential interferences from nitrogen compounds in the atmosphere. The various commercial units use different kinds of NO_2 converters. Some of these may suffer from an NH_3 interference and for most the efficient conversion lifetime is unknown. A primary objective of this study is to provide a standard recipe for a long life-time, efficient conversion process, against which all others may be compared. Methods for removing the NH_3 interference have been described. Using the current converters, potential interferences such as PAN, organic nitrites and nitrates and HNO_3 are being tested.

Project initiated 7/72; anticipated completion date 6/73.

METHOD OF SUPPORT (CHECK ONE)

_X_ INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Larry E. Martin

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $8,000
C. N/A
D. ROAP 26 ACX, Task 09

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Evaluate Chemiluminescent, Colorimetric, and Coulometric Methods To Measure NO_2 and Ozone

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Thomas Clark (Research Chemist)
R. K. Stevens (Superv. Res. Chemist)
Ralph Baumgardner (Chemist)
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Res. Center, Res. Tri. Park, NC

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Recent advancements have been made in the measurement of nitrogen dioxide and ozone. An instrument has been fabricated which uses the chemiluminescent reaction of ozone and ethylene to measure ozone. Instruments using this method have been found to be sensitive and give very reproducible results. Also recently designed and built is a monitor which uses the chemiluminescent reaction of ozone and nitric oxide to measure nitric oxide and the quantitative conversion of nitrogen dioxide by a converter to nitric oxide for measurement of nitrogen dioxide. This method is also very sensitive and specific.

Since these instruments utilize new measurement techniques it is important that they be compared to more classical and accepted methods for the measurement of NO_2 and O_3. This evaluation study will compare the continuous chemiluminescent monitors with colormetric and coulometric monitors. The study will be performed under lab conditions. Parameters to be checked include instrument drift, stability, correlation between measurements and response data under actual sampling conditions. The instruments will be calibrated using standard procedures for generating known concentrations of desired gases. Once the calibration is completed, the instruments will sample ambient air continously for a three month period. Once a week the instruments will be calibrated. A complete log of instrument failures and maintenance requirements will be kept. The results of the study will show the manner the new methods perform in relation to the more accepted methods and also how all methods tested perform under sampling conditions. Design for the test procedures will be completed by 9/1/72 and the evaluation will be completed by 10/1/73.

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas A. Clark

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $8,000
C. N/A
D. ROAP ID 26 ACX; Task 10

SI SIE-28A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Evaluate Low Cost Prototype Monitor for NO_2 (Electrochemical)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Thomas A. Clark, Research Chemist
Robert K. Stevens, Research Chemist
Ralph Baumgardner, Chemist
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Much of the field sampling for nitrogen dioxide has been carried out by the use of a manual bubbler method. This colorimetric method has been used because of its low cost and lack of other acceptable method to replace it. There are certain limitations using this manual method. There has existed a need for a low cost continuous instrument which will give more reliable data and also give a greater amount of information. Such a monitor has recently been fabricated which will give a continuous measurement for NO_2 and will be relatively inexpensive. This is a electrochemical device using a membrane and a sealed cell.

In this evaluation study, the new monitor will be evaluated in terms of its general response characteristics. Also it will be compared to the manual method and other instrumental methods for the measurement of NO_2. The study will take place partly in the lab and partly under field sampling conditions. The methods used in this study include the low cost continuous NO_2 monitor, the 24-hour bubbler and one or more type of continuous monitor (chemiluminescent, colorimetric). Certain parameters will be checked in the lab to determine the general response characteristics for the electrochemical device. These include response time, drift and calibration. When the lab tests are complete, the different devices will sample ambient air for at least one month. During this time data will be gathered to determine the correlation between the electrochemical device and the other methods.

(Continued on next sheet.)

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas A. Clark

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $6,000
C. N/A
D. ROAP 26 ACX, Task 11

The results of the evaluation study will determine if the low cost continuous monitor can replace the 24-hour manual method now used. The prototype monitor will be fabricated by 8/1/72 and the field evaluation will be completed by 5/1/74.

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Collection and Analysis of Atmospheric NO_x

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Eugene Sawicki, Chief, Laboratory Measurements Research Section; Marvin F. Guyer, Biological Laboratory Technician; James E. Meeker, Chemist, James D. Mulik, Research Chemist; Eva Wittgenstein, Research Chemist
Laboratory Measurements Research Section
Robert G. Fuerst, Research Chemist, Office of Measurement Standardization
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes. The project involves the development of reliable, inexpensive procedures for the 24-hr collection and subsequent analysis of nitrogen dioxide (NO_2) and nitric oxide (NO). The method should have the following ideal criteria. Range of analysis should be from 4 $\mu g/m^3$ to 700 $\mu g/m^3$ of NO_2 with a collection efficiency of over 90% for the entire range. The interference from nitric oxide, sulfur dioxide, ozone, carbon monoxide, phenols, hydrogen sulfide, aldehydes, and carbon dioxide should be negligible or non-existent. The reagents used in collection and analysis should be picked to be the least hazardous possible. In addition, the method should be accurate, reproducible and capable of use in the field. The project was begun about April 1972 and will be finished about December 1972.

An improved analytical procedure based on the use of the nitrate selective-ion electrode to measure NO_2 directly after its conversion to the nitrate ion is being developed to accommodate the new collection method. The use of the selective-ion electrode has the advantages of being rapid, specific, and direct in its analysis with use of inexpensive equipment and simple techniques. Several means of converting the nitrite ions of the collected NO_2 to nitrate ions for measurement are being investigated. Also a separation of the ions to be measured from the collecting medium to insure no interferences to the measuring electrode and provide a lower limit of detection for nitrate will probably need to be developed. The nitrate electrode shows a linearity of over five orders of magnitude and a lower limit of detection for nitrate of approximately 0.1 ppm NO_3^- in pure aqueous solutions.

Then further work will follow on the development of methods of solid state collection and analysis of other gases, vapors and particulates using inexpensive solid state collection devices, a reliable collector and 2 interfacing devices for mating to gaseous and wet chemistry analysis systems.

Period of Performance: 2/72 - 7/74.

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Eugene Sawicki

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $17,000
C. N/A
D. ROAP 26 ACX, Task 12

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NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800708

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Department of Physics, American University, Washington, D.C.

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF **ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT**, BEGINNING WITH PRINCIPAL INVESTIGATOR

Dr. Richard B. Kay, 489-36-6614 Assistant Professor of Physics
American University

TITLE OF PROJECT

Birefringent Filter for Optical Monitoring.......

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The object of this effort is the development of an accurate, simple, small lightweight, inexpensive, and dependable field instrument for optical monitoring of air pollutants, with initial concentration on SO_2 near 2900 Å and NO_2 near 4300 Å. The instrument is a new approach to spectral analysis of pollutants and would employ a tunable birefringent filter whose bandpass would be selective to several major peaks in the absorption spectra of the air pollutant. The instrument would have all the advantages of a correlation spectrometer, but few of its disadvantages, in particular, size, weight, and cost would all be appreciably less.

It is believed that a production-line instrument based upon this development instrument would be lightweight and compact; e.g. the receiving optics, birefringent filter, and detector, and also the transmitter optics and source could each fit into a 10 inch cylinder of 3 inch diameter, while the electronics package would be on the order of 10 pounds, excluding recorders.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD	6-12-72	6-11-73
BUDGET PERIOD	6-12-72	6-11-73
ANNUAL EFFORT	$8,210	
MULTIPLE FUNDING		
I.D. NUMBER	26ACX-13	

SI-SIE-19A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Evaluate Low Cost Monitor for SO_2 (Electrochemical)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Thomas A. Clark, Research Chemist
Robert K. Stevens, Research Chemist
Ralph Baumgardner, Chemist
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Monitoring for ambient concentrations of SO_2 is now carried out by the combination of continuous instrumentation (photometric coulometric, colorimetric) and manual methods (bubblers, lead candle). There has been a need for a low cost SO_2 monitor which will run for long periods unattended and give reliable results. A monitor is being built which uses a sealed electrochemical cell as its measurement principle. The design is condusive to low cost and low maintenance.

This study will take the prototype monitor once complete and evaluate it in terms of its general response characteristics and also by a field comparison study with other instruments. Methods used in the comparison study will include one or more continuous instrument (photometric, colorimetric) and the new electrochemical device. Parameters that will initially be checked will be response time, drift, reproducibility and calibration. The instruments will be calibrated using standard procedures for generating known concentrations of SO_2. Once these parameters are checked the instrument will sample ambient air for an extended period. The instruments will be calibrated once a week and a complete log of instrument failures and maintenance will be kept. The results of the study will show if the new electrochemical device meets desired specifications and if the instruments will perform correctly for long time periods. The instrument will be fabricated by 8/1/72 and field evaluation will be completed by 5/1/74.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas A. Clark

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____

A. 7/72-6/73
B. $6,000
C. N/A
D. ROAP 26 ACX, Task 15

SI-SIE-7&A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800792

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Kansas State University
Manhattan, Kansas 66502

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Lambert, Jack L., 496-01-6666, Professor of Chemistry, Department of Chemistry

(to be named) Graduate Research Assistant

TITLE OF PROJECT

New Analytical Methods for Sulfur Dioxide

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The objective of this research is the development of several new types of analytical reagents for sulfur dioxide in air. We have found a class of compounds exemplified by 2,5-dimercapto-1,3,4-thiadiazole and related anions that is selective as colorimetric or piezoelectric reagents. The reaction is reversible and releases sulfur dioxide slowly at room temperature from either the solid compounds or their solutions, or rapidly at elevated temperatures. The gain in mass of the reagent on a quartz oscillator crystal changes the frequency of that crystal in relation a reference crystal. The frequency change can serve as the basis for telemetry. The reversibility of the reaction makes the reagent self-renewing.

Compounds formed between certain triphenylmethane dye cations and azo dye anions supported on alumina show promise as cumulative reagents for passive monitoring. One such compound undergoes permanent change in color upon exposure to sulfur dioxide. Another changes color reversibility and would be self-renewing. The low solubility of a third type provides a reagent solution of reproducible concentration containing as an internal colormetric standard the non-reactive azo dye anion. Salts of oxohydroxobis(8-hydroxyquinoline)vanadium(V) have been found to respond non-selectively to sulfur dioxide and other acid producing gases with change in color from yellow to intense black

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT X GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 9/1/72 8/31/73

BUDGET PERIOD 9/1/72 8/31/73

ANNUAL EFFORT $25,000

MULTIPLE FUNDING

I.D. NUMBER ROAP 26ACX, Task 17

194

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Evaluate Alternate Spectroscopic Methods For CO Measurements

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Thomas Clark, (Research Chemist)
Robert K. Stevens, (Superv. Res. Chemist)
Ralph Baumgardner, (Chemist)
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Res. Center, Res. Tri. Park, N. C.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Ambient concentrations of CO are now measured by a non-dispersive infrared technique. This method has been widely used, but suffers from some limitations. Certain charges are being made which will improve the existing NDIR method. Other infrared techniques are now being explored for possible use in CO measurement.

In this study the newly developed spectrometric techniques will be evaluated against the present NDIR and also against the gas chromatographic CO monitor. The study will be divided into two parts. The first part of the evaluation study will be a lab evaluation of the general performance characteristics of the new instrument method. The second part of the study will be a field evaluation in which all of the instruments will sample ambient air. In the lab study certain parameters will be checked for the new spectrometric devices. These include, sensitivity, interferences, drift, response time and calibration. The field evaluation will consist of sampling with weekly calibration. Correlation of instrument response, and calibration drift will be checked.

These evaluations will show whether the newly developed and improved spectrometric method compares favorably with the more accepted methods for the CO measurement. The lab-evaluation will be completed by 1/1/74 and the field evaluation will be completed by 8/1/74.

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas A. Clark

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $6,000
C. N/A
D. ROAP ID 26 ACX - Task No. 20

SI-SIE-78A: REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Compare Std. NDIR Methods to Measure CO With Gas Chromatographic Techniques

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Thomas A. Clark: (Research Chemist)
R. K. Stevens: (Superv. Res. Chemist)
Ralph Baumgardner (Chemist)
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Res. Center, Res. Tri. Park, N. C.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A non-dispersive infrared device has been used to measure ambient concentrations of CO. Certain problems exist with the use of this instrument, such as, interference from water vapor and drift of the response signal. In an effort to make measurement of CO more reliable a prototype instrument has been developed which uses gas chromatography to measure CO. The chromatograph has a flame ionization detector and also has a catalytic converter to convert CO to methane so the CO can be detected in the flame. It is possible with this instrument to make CH_4, CO and total hydrocarbon measurements. This instrument is specifically for CO and has other features which make it a possible method of the measurement of CO.

In this evaluation study, the G. C. method for CO measurement will be compared with NDIR method now used. Each method will be evaluated in terms of response, drift, interference, stability, and sensitivity. The instruments will be calibrated using standard mixtures of CO at known concentrations. Both instruments will monitor ambient air and the response data will be compared. A log of instrument failure and maintenance requirements will be kept. The evaluation will be completed by 8/1/74. Project commenced 10/72.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas A. Clark

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $6,000
C. N/A
D. ROAP ID, 26ACX; Task 21

SI-SIE-26A, REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Evaluate Tunable Laser Designed to Measure Formaldehyde

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. William A. McClenny, Research Physicist
John P. Bell, Chemist
Barry E. Martin, Chemist
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK -- (200 words or less.) -- In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Gas lasers which have spectral output frequencies which occur near absorption gradients in the infrared band structure of a pollutant gas, can be used to monitor the concentration of the pollutant. This is accomplished by Zeeman splitting the laser line into two lines by placing the lasing medium (discharge tube) in a magnetic field. The two lines then fall at different frequencies on the absorption gradient, leading to a differential absorption, when passed through an atmosphere containing the pollutant. The system to be evaluated was originally assembled under Contract No. 68-02-0203 and was intended to test the ideas concerning coincidence absorption which were advanced by the project officer, Dr. P. Hanst.

The objective of the evaluation program is to use the instrument in laboratory absorption experiments in order to determine its sensitivity, the extent of interferences, and other relevant parameters. Accurately calibrated concentrations of HCHO can be established in an inhouse constructed multipass cell.

Project to be initiated January, 1973; anticipated completion date January, 1974.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William A. McClenny

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/1/72 - 6/30/72
B. $20,000 (FY 73 fund)
C. N/A
D. ROAP 26 ACX, Task 25

51-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Develop Collection Device for Formaldehyde

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Eugene Sawicki, Chief, Laboratory Measurements Research Section
James D. Mulik, Research Chemist
James E. Meeker, Chemist
Laboratory Measurements Research Section, Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A solid state device is to be developed for the collection of formaldehyde in a stable combined form from which formaldehyde or a derivative can be stripped off in liquid or gaseous form. The possibility of determining total aldehydes with this system will also be investigated.

Project to be initiated 2/73; anticipated completion date 7/74.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Eugene Sawicki

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 7/72-6/73
B. $14,000
C. N/A
D. ROAP 26 ACX, Task 28

SI-SIE 78A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Evaluate Prototype Instrumental Monitor (e.g. Electrochemical) for HCl, Cl_2 (Acid Gases)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Thomas A. Clark, Research Chemist
Robert K. Stevens, Research Chemist
Ralph Baumgardner, Chemist
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Ambient concentrations of HCl, Cl_2 and acid gases are not measured using certain manual electrochemical techniques. These procedures have for the most part lacked the sensitivity and specificity to accurately characterize the concentration of these pollutants in the atmosphere. There has been a definite need for a continuous or semicontinuous monitor which will measure accurately HCl, Cl_2 and the acid gases. At the present time, a new prototype electrochemical monitor is being constructed which will satisfy these demands.

In this evaluation study the new prototype instrument will be studied both in the lab and in the field. The laboratory evaluation will consist of calibration, response characteristics, interference checks, and sensitivity measurements. The instrument will monitor known concentrations of Cl_2 and HCl. The field evaluation will take place at a selected sampling site. The monitor will measure ambient air for an extended period. Reference measurements will be made both in the lab and in the field by existing measurement techniques. The results of the evaluation study will determine if the new prototype electrochemical monitor is superior to the techniques now used. The lab evaluation will be completed by 4/1/73 and the field evaluation will be completed by 8/1/75. Project will commence 11/72.

METHOD OF SUPPORT (CHECK ONE)
☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas A Clark

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $3,000
C. N/A
D. ROAP 26 ACX, Task 32

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801050

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Missouri, Columbia, Missouri 65201

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Walter A. Aue, 269-44-7200, Associate Professor, Agric. Chemistry
Klaus O. Gerhardt, 497-58-5322, Research Analytical Chemist, Ag. Chem.
Roy H. Rice, 355-22-3068, Mass Spectrometrist, Ag. Chem.

Charles W. Gehrke, 287-14-2535, Professor and Supervisor Exp. Sta. Chem. Labs, Ag. Chem., will serve as advisor.

TITLE OF PROJECT

Collection and Analysis of Organic Air Pollutants

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Support-bonded silicones have been invented, and their potential for collecting organic compounds from the atmosphere demonstrated, in our laboratory over the last two years. In this project we propose to further develop and test model systems for the collection and subsequent analysis of organic air pollutants. To this purpose, the chemistry of support-bonded liquid phases will be further explored, model polymers with various functional groups synthesized and chemically bonded onto inert supports in extremely thick layers. Suitable cartridges containing these materials will be used to demonstrate remote, high-speed sampling - at ambient temperature - of air pollutants from natural and man-made sources at typical urban and rural locations in Missouri. Only a pump needs to be used with the cartridge, which can be sealed and mailed to the laboratory. There, equipment developed from a present prototype will serve in the counter-current extraction of these "full" cartridges. The subsequent analysis of the extracted and concentrated air pollutants will make predominant use of instrumentation based on gas chromatography: Capillary columns, selective GLC detectors, coupled high-resolution mass spectrometry, pre-column subtraction loops, and the like. Finally, the synthesis and application of the inexpensive types of support-bonded materials will be investigated for the removal of typical organic compounds from simulated, gaseous plant effluents. These compounds will subsequently be reclaimed, and the support-bonded material re-used, in a prototype recycling process.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-15-72 . 6-14-75
BUDGET PERIOD 6-15-72 6-14-73
ANNUAL EFFORT $38,519
MULTIPLE FUNDING
I.D. NUMBER 26ACX-36

PHS 908

SI-SIE-7bA; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800869

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

College of Medicine, University of Cincinnati, Cincinnati, Ohio 45219

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Saltzman, Bernard E., 069-16-2501, Professor of Environmental Health.
Dept. of Environmental Health
Burg, William R., 710-12-6690, Sr. Research Associate, Dept. of Env. Hlth.
Cuddeback, John E., 582-72-4758, Research Associate, Dept. of Env. Hlth.
Younker, Waldo, 283-40-7566, Instrument Specialist, Dept. of Env. Hlth.

TITLE OF PROJECT

Development of Air Sampling Methodology

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The objective of this project is to examine critically and to improve the present technology for air sampling and analysis. Attention will be focused on the application of newly developed instrumental systems and detectors to utilize their capabilities for improved separations and for high sensitivities in the nanogram range. (Solid absorbent reagents will be sought for convenient and stable sample collection. Either the test substance or a characteristic reaction product will be liberated for analysis and determined with an instrumental system. Basic theoretical relationships will be developed for sampling parameters)

Practical applications for more sensitive and specific analytical methods will be sought to meet the needs of air quality standards, and for non-urban background studies. Simplifications, multiple pollutant procedures, and improved means for calibration, standardization and automation of these systems will be developed.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 3-1-72 2-28-75
BUDGET PERIOD 3-1-72 2-28-73
ANNUAL EFFORT $37,185
MULTIPLE FUNDING —
I.D. NUMBER 26 ACX-37

SI-SIE-78A, REV 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Develop and Evaluate Tunable Lasers for Absorbance Fluorescence Measurements of Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Jimmie A. Hodgeson, Research Chemist
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Since gases have characteristic absorption spectra, the output from a tunable source can be matched to specific absorption maxima to enhance the extent of absorption. Large amounts of energy can be transferred by absorption, using tunable laser sources which provide a high amount of energy per wavelength interval. Energy absorbed by a specific gas is subsequently transferred mainly in two ways: (1) spontaneous emission, (2) collisional deexcitation. In infrared, the collisional deexcitation is more likely. Periodic pulsing of an IR laser source thus can lead to periodic pressure variations, the magnitude of which can be related to concentration of the absorbing gas.

The purpose of this project is to construct an apto-acoustic detector based on designs of previous investigators and evaluate the feasibility of making concentration measurements with the device. Tunable laser sources such as a dye laser and possibly a CO_2 gas laser will be adapted to the experiment. These two sources can also be used in strict absorption measurements using a multipass cell which has been constructed in-house.

Project to be initiated 1-73; anticipated completion date 1/74.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J. A. Hodgeson

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $31,000
C. N/A
D. ROAP 26ACX, Task 40

SI-SIE-70A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO. 800697

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

Remote Control of Air Pollution Using A Laser

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

James W. Robinson, 434-56-4207, Professor, Department of Chemistry

Unknown, Postdoctoral Fellow, Department of Chemistry

Nobuki Katayama, 433-90-6951, Graduate Student, Department of Chemistry

Unknown, Graduate Student, Department of Chemistry

Sharon Richard, 434-80-9279, Secretary, Department of Chemistry

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Louisiana State University
Baton Rouge, Louisiana 70803

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

It has been shown that when a beam from a CO_2 laser (λ10.6μ) passes through a vapor of organic compounds, the latter are caused to vibrate and become excited. They then relax and fluoresce on the infrared region of the spectrum. The fluorescence spectrum is very similar to the IR absorption spectrum and can therefore be used to identify the compound in the vapor. In addition, the fluorescence intensity is a function of the concentration of the compound. These two facts form the basis for the development of a method of qualitative and quantitative analysis of the compound or compounds in the vapor. It has also been shown that the laser can stimulate vapors remote (several meters) from the laser source. This indicates the potential for a very remote detection system (kilometers).

It is proposed that based on these observations a scanning device can be developed for monitoring air pollutants. Using this device the identification and concentration of the air pollutants can be measured without prior collection or sampling of the atmosphere. This would greatly contribute to the speed and accuracy of the method and would be a distinct advantage over current analytical methods.

Preliminary studies show that the method should work for detecting and monitoring the concentration of inorganic compounds such as SO_2, NO_2, and O_3, also for organic compounds such as paraffins, olefins, amines, nitro compounds, halides, etc. It is not anticipated that the method would distinguish between such compounds as hexane and heptane because their IR spectrum are so similar. However, the concentration of 'hydrocarbons' should be measurable.

A major problem in simple IR emission methods is the sample temperature variation which causes large charges in the intensity of the IR emission signal. By using a modulated laser source and tuning the detector to the frequency of modulation, the steady dc signal from thermal excitation would not be detected and its interference effect would be eliminated. This phenomenon of laser induced IR fluorescence is not to be confused with LIDAR which is a light scattering technique.

LEAVE BLANK DO NOT WRITE BELOW THIS LINE

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 4-1-71 5-31-74
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $36,781
MULTIPLE FUNDING
I.D. NUMBER ACX-43

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801429

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Radiation Laboratory, Tulane University, 6823 St. Charles Ave., New Orleans,
Louisiana 70118

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Hidalgo, John U., Director, Radiation Laboratory 438-40-9530
Director, Engineering Sciences Environmental Center

Christy, Edmund H., Associate Research Scientist 436-58-4561
Radiation Laboratory

TITLE OF PROJECT

Development and Use of a Laser Air Pollution Monitor

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The purpose of this projected work is to complete the development of equipment for a Laser Air Pollution Monitoring System and to demonstrate and evaluate its applicability to large-area gaseous pollution monitoring. The technique employed operates from a centrally located site and is basically insensitive to atmospheric disturbances and particulate pollution. The specific pollutants to which the system is applicable include Ozone, Sulphur Dioxide, and Ammonia. The measurement sensitivities for these and other pollutants, individually and in mixture, will be established.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD	6-1-71	5-31-73
BUDGET PERIOD	6-1-72	5-31-73
ANNUAL EFFORT	$23,500	
MULTIPLE FUNDING	—	
I.D. NUMBER	ACX-46	

SI-SIE-784, REV. 8-04

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Feasibility Study of a Gunn Diode Microwave Cavity Spectrometer as a Formaldehyde Gas Monitor

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. L. W. Hrubesh, Project Officer
Dr. Jimmie A. Hodgeson, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: U.S. Atomic Energy Commission, Lawrence Livermore Laboratory, Livermore, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Microwave rotational spectroscopy should provide a highly specific approach for the measurement of small, polar air pollutants. Recent advances in microwave instrumentation have indicated that the previous problem of inadequate sensitivity may be overcome. The state-of-the-art in simplified microwave spectrometers consists of a Gunn-diode source, resonant cavity system which may be used for trace gas detection. This work will test the utility of such a system for atmospheric formaldehyde by actual construction and testing of a bench-scale model. The scope of work will include a) optimization of instrument design parameters to achieve maximum sensitivity; b) testing and application of membrane-type separators for sample enrichment into the detector system; c) construction of a working spectrometer system; d) testing and demonstrating the design of (c) above, as a monitor for trace concentration of formaldehyde in air; and e) delivery of completed system to EPA.

Period of Performance: 5/24/72 - 5/23/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
__ GRANT
X INTERAGENCY AGREEMENT EPA-IAG-0179(D)
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

A. 5/72-5/73
B. $50,000
C. N/A
D. ROAP 26 ACX, Task N/A; FY 72 funded.

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800167

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Washington State University, Pullman, Washington 99163

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Reinhold A. Rasmussen - 010-28-4755 - Associate Plant Physiologist, Air Pollution Research Section
Elmer Robinson - - Professor of Meteorology, Air Pollution Research Section
Michael Holdren - 251-84-0582 - Research Assistant, Air Pollution Research Section

TITLE OF PROJECT Evaluation of a New "Cryogenic Sampler" for Field Use

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The first objective is to further improve the performance of the cryocondensers developed for the field collection and concentration of atmospheric trace hydrocarbons to maximize field utility, collection precision and component identification.

The second objective is to separate the collected trace organics into four fractions; 1. methane; 2. light hydrocarbon fraction C_2 to C_4; 3. intermediate C_5 to C_6 fraction including isoprene, and 4. the aromatic and terpene fraction C_7 to C_{10}. The necessity of this objective is indicated by the observation that plant foliages emit many more compounds to the atmosphere than isoprene and terpenes. These studies will yield an increase in sensitivity, accuracy of component identification and also provide a balanced quantitative analysis of atmospheric C_1 to C_{10} compounds.

The third objective is to improve the gas chromatographic analysis of the trace atmospheric organics collected. To achieve this objective, greater resolution of the numerous peaks (10 to 60) presently separated by packed column analyses of rural and recreational atmospheres must be obtained for more precise identification of these peaks.

Since the whole composition of the air sampled by the cryocondenser is preserved in the liquid state, studies will be initiated to measure the amounts of oxidant and oxides of nitrogen present in rural and remote atmospheres.

Essential to the completeness of the study is a correlation of the meteorological history of the air mass sampled with air quality data obtained by the Air Pollution Research Section's instrumented aircraft, and the chemical data on the trace organics, oxidants and oxides of nitrogen. In this manner a precise and complete sampling of an air mass as it moves over unspoiled forest lands, rural areas and/or urban centers would be obtained so that an estimate could be made of the contribution natural sources make to the atmospheric load of hydrocarbons, oxidant level, and haze.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD	6-1-72	5-30-74
BUDGET PERIOD	6-1-72	5-30-73
ANNUAL EFFORT	$38,454	
MULTIPLE FUNDING	—	
I.D. NUMBER	26 ACX (No task assigned; FY 72 funded)	

SI-SIE-76A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800438

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Washington State University
Pullman, Washington 99163

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Adams, Donald F.	539-05-8182	Research Chemist and Section Head, College of Engineering Research Division
Pack, Merrill R.	529-22-4514	Associate Plant Physiologist College of Engineering Research Division
Higinbotham, Noe	533-36-9502	Professor, Department of Botany
Craine, Lloyd B.	544-30-7736	Research Electrical Engineer, College of Engineering Research Division Department of Electrical Engineering, Professor
Epperson, Robert D.	571-78-1028	Graduate Research Assistant

TITLE OF PROJECT

DEVELOPMENT OF A FLUORIDE-SPECIFIC MICROELECTRODE

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Macroscopic aspects of fluoride accumulation by and visible damage to plants have been quite well described. Specific sites of fluoride accumulation within plant tissue are less well-known. Attempts to follow the dynamic progression of fluoride through plant tissue have been unsuccessful because of a lack of discriminative techniques. Autoradiography, for example, does not provide a suitable experimental technique for monitoring the dynamic movement of fluoride through living tissue. If it were possible to follow the dynamic movement of fluoride through the tissue, it would provide fundamental information relating the significance of a change in a fluoride-effected metabolic step with the metabolism and physiology of the plant as a whole and the relation of these metabolic changes to injury or reduced yield.

It is proposed to investigate electrochemical systems which might form the basis of a fluoride-specific microelectrode which could be inserted within individual plant cells in either intact or incised tissue. The state of the art for ion-specific electrodes is now well-developed. Macroelectrodes have been devised and some are commercially available for the quantitative determination of many common cations and anions. A macro fluoride-specific electrode is commercially available. Ion-specific microelectrodes are emerging from research laboratories, but no one has produced a fluoride-specific microelectrode.

The electrode systems to be considered for the production of a fluoride-specific microelectrode fall into four major classes: solid-state or precipitate, liquid-liquid membrane, galvanic reaction, and microcapillary. The development of a fluoride-specific microelectrode will provide a valuable tool for the dynamic study of fluoride movement and accumulation at the cellular level in intact plants.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 11-1-70 1-31-73
BUDGET PERIOD 2-1-72 1-31-73
ANNUAL EFFORT $9,995
MULTIPLE FUNDING
I.D. NUMBER 26 ACX(No task assigned; FY 72 funded)

SI-SIE-79A, REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Improved Photometric Flame Detector for Measuring SO_2

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. A. Horning, Project Director
Dr. Jimmie A. Hodgeson, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Baird-Atomic Inc., 125 Middlesex Turnpike, Bedford, Massachusetts 01730

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Design, fabricate, test, and couple to optics developed under Contract EHSD 71-50 a new flame housing for the Flame Photometric Detector. The new burner shall be optimized to view S_2 emission with the correlation mask. Redesign and fabricate the sample and hydrogen intake system to include improved flow contact and flame stability. Assemble the final design of the optimized flame photometric detector. Determine the extent of signal-to-noise improvement over previous design and establish minimum detectable level of SO_2. Deliver the optimized total system to EPA at the conclusion of the research.

Based on these studies, prepare final report to include a design of the flame housing and optics from which a prototype monitor can be fabricated. The contractor shall provide recommendation for the detection of As and Se by flame photometry.

Period of Performance: 6/7/72 - 3/6/73.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT 68-02-0275
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

A. 6/72-3/73
B. $31,786
C. N/A
D. ROAP 26 ACX, Task FY 1972 Funded

SI-SIE 78A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Feasibility of a Fluorescent Source Nondispersive Infrared Analyzer for Nitric Oxide

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. E.A. McClatchie, Senior Scientist
Allen Compher, Research Physicist
Andrew E. O'Keeffe, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:
Arkon Scientific Labs, 930 Dwight Way, Berkeley, California 94710

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Procurement of a breadboard NO_2 analyzer utilizing pressure-induced luminescence as an energy source and nondispersive spectrometry as a measurement technique. Specific scope of work includes:

a. Adapt pressure - induced luminescence of NO and NO_2 to a suitable fluorescent source;
b. Design and develop a high-compression high-frequency actuator;
c. Investigate and select an infrared detector suitable for NO measurement;
d. Assemble a breadboard NO analyzer using results of (a), (b), and (c) above (this shall be delivered to the Government at the conclusion of the contract);
e. Determine applicability of technique to NO_2 analysis.

Period of Performance: 4-26-72 - 10-8-72

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

X CONTRACT No. 68-02-0021 (Mod.)

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

A. 4/72 - 10/72
B. $41,356
C. N/A
D. ROAP 26 ACX TASK FY 1972 Funded

SI-SIE-79A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Device for Collection and Assay of Ambient Gases

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J.D. Bode, Principal Investigator
J.W. Schiller
D.R. Browning
Dr. D.D. Snyder
Dr. M.G. Jacko
A.M. Kiwior
E.J. Leaseburge
Dr. Eugene Sawicki, Project Officer,
Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: The Bendix Corporation, Research Laboratories,
20800 Ten and One-Half Mile Road, Southfield, Michigan 48076

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The main purpose of this study is to develop (1) a reliable sturdy universal collector for gases, vapors and particulates, (2) solid collection devices which will collect atmospheric pollutants quantitatively under realistic field conditions and will be simple, inexpensive, shipped without difficulties and have excellent shelf lines and (3) appropriate interfacing to milk the pollutant from the device quantitatively as is or in a stoichiometrically modified form for analysis. These methods should be a beginning in the development of low cost reliable networks for regional, national and international air pollution studies of atmospheric gases, vapors and particulates. Inaccessible regions could be surveyed. Small laboratories could participate. Areas without laboratories or instrumentation could participate. All that would be needed in the field would be simple solid collection devices and the universal collector. The minimum equipment in the lab would be a colorimeter. A sophisticated central lab would have two interfacing devices, one for milking gases out of the collection device into a gas analysis system and the other to elute a solution of the analyte into a wet analysis system. The gas analysis equipment could include gas chromatograms, a mass spectrometer, chemiluminescent monitors, etc. The wet chemistry equipment could include colorimeters, fluorimeters, sophisticated automatic analyzers, etc. The potential of both manual and automated systems will be stressed. NO_x is the guinea pig for this system of analysis.

Period of Performance: 6/30/72 - 6/29/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT 68-02-0657
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

A. 6/72 - 6/73
B. $47,581
C. N/A
D. ROAP 26 ACX, Task FY 1972 Funded

SI-SIE-78A, REV 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Photochemical Oxidation of Aromatic Hydrocarbons

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Richard Kuntz, Research Chemist
Mr. Stanley Kopczynski, Research Chemist
Mr. Ted Winfield, Research Chemist
Gas Photochemistry and Kinetics Section
Atmospheric Chemistry and Physics Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The photooxidation of aromatic hydrocarbons is poorly understood. Although it is commonly accepted that atomic oxygen (resulting from NO_2 photodissociation) will initiate the oxidation of aromatics, the actual mechanism is not well understood. The products resulting from the carbon fragments have not been adequately identified since the carbon balance in these systems is usually poor. This study will make use of all of the conventional methods as well as the new Fourier Transform Spectroscopy system.

This project will begin in January, 1973 and will end in June, 1973.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

Joseph Bufalini

SIGNATURE OF PRINCIPAL INVESTIGATOR Richard Kuntz

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________

A. 7/72-6/73
B. $28,000
C. N/A
D. ROAP 26 AAD, Task 2

SI-SIE-78A, REV. 9-68

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Formation of Oxygenates in Photochemical Reactions: Products, Rates and Mechanism

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Bruce Gay, Research Chemist
Dr. Joseph Bufalini, Research Chemist
Mr. Stanley Kopczynski, Research Chemist
Gas Photochemistry and Kinetics Section
Atmospheric Chemistry and Physics Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The new Fourier transform spectrometer has opened up new areas for atmospheric research studies. These include the identification of products and the elucidation of mechanisms of reaction and the measurement of rates. It is anticipated that such products as H_2O_2, HCOOH, HNO_3 and PAN type compounds will be observed when hydrocarbons are photodissociated in the presence of ultraviolet light and water vapor. These observations will enable us to write mechanisms and obtain rates of reactions for atmospheric pollutants.

This project will begin in August, 1972 and is expected to run until 1975.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Joseph Bufalini

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $56,000
C. N/A
D. ROAP 26 AAD, Task 4

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Role of H_2O in Photochemical Reactions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Joseph J. Bufalini and Mr. Bruce W. Gay, Jr.

Division of Chemistry and Physics, Atmospheric Chemistry and Physics Branch

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, N. C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Published data on the effect of water vapor on photooxidation reactions are often confusing and contradictory. Some preliminary work suggests that organic acids are produced when hydrocarbons are photooxidized in the presence of water vapor. The work proposed is to photooxidize hydrocarbons (olefins, paraffins, and aromatics) in the presence of oxides of nitrogen and varying amounts of water vapor. The rate of reactant disappearance will be noted as well as product formation. The new Fourier transform spectrometer coupled to a long-path irradiation cell will be employed in these studies. In other cases where a complete carbon and nitrogen balance are desired, chromatographic, chemiluminescent and wet chemical detectors will be employed with a large borosilicate flask serving as the reaction vessel. This work will begin in the second quarter of FY 1973.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J J Bufalini

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 10/72-6/73
B. $28,000
C. N/A
D. ROAP 26 AAD, Task 9

[illegible] REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800916

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of North Carolina
Chapel Hill, North Carolina

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLES, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Dr. Lyman A. Ripperton, Associate Professor, Env. Sci. and Eng. (457-34-8468)
Dr. Harvey Jeffries, Res. Assoc. and Co. P.I. Env. Sci. and Eng. (242-64-1253)
Dr. Donald Fox, Research Associate Env. Sci. and Eng. (510-43-3040)
Richard Kamens, Research Associate Env. Sci. and Eng. (076-34-9650)

TITLE OF PROJECT

Experimental Tests of Air Pollution Control Strategy

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

A test will be made of the relationship of non-methane hydrocarbon concentration to the oxidation of nitric oxide to nitrogen dioxide in simulated photochemical smog. This will provide test evidence regarding the feasibility of using ambient hydrocarbon control as a means of controlled nitrogen dioxide concentrations. Reactant gases, in concentration ranges which include current air quality standards, will be studied in air with natural humidity and temperature and will be irradiated with natural sunlight in 7000 cubic feet clear Teflon chambers. Reactents (hydrocarbon and nitric oxide) and products (nitrogen dioxide, ozone and oxidant) will be measured with techniques designated in the Federal air quality standards (where such standards exist). The overall purpose of these experiments is to obtain better test information than now exists for evaluating hydrocarbon control as a tactic of nitrogen dioxide control.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD	6-15-72	6-14-73
BUDGET PERIOD	6-15-72	6-14-73
ANNUAL EFFORT	$139,864	
MULTIPLE FUNDING		
I D. NUMBER	26AAD-11	

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO. 801120

SUPPORTING AGENCY: **Environmental Protection Agency**

[illegible] of [illegible] Present in Urban Air

[illegible] S. Johnston, Director, Prof. of Chem. 2[illegible]3-14-1518
[illegible] post-doctoral research chemist
[illegible] Pochert, graduate student
[illegible] graduate student
[illegible] Morris, graduate student

University of California
Berkeley, California 94720

Photochemical reactions are initiated by absorption of visible or ultraviolet radiation and occur, typically, as a series of chemical reactions involving free radical, atomic, or other unstable intermediate species. The understanding of a photochemical reaction requires the identification of these chemical steps and the highly reactive intermediates. For simple photochemical reactions, the mechanism in terms of steps and species can be deduced from kinetic measurements of rates of formation of all products. However, for reactions of only moderate complexity, a kinetic study of reactants and products is insufficient. We must observe the intermediates and measure their lifetimes in order to understand complex photochemical reactions. Our research goal is to develop spectroscopic and mass spectroscopic methods of direct observations of free radical intermediates - at very low concentrations - in order to clarify the mechanism of photochemical reactions.

METHOD OF SUPPORT: INTRAMURAL ___ CONTRACT ___ [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 5-1-68 4-30-73
BUDGET PERIOD 5-1-72 4-30-73
ANNUAL EFFORT $45,000
MULTIPLE FUNDING
I.D. NUMBER 26 AAD-12

SI-SIE-7&A; REV. 6-64

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
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SIE NO.

AGENCY NO. 800398

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

Mechanisms of Photochemically Initiated Oxidations

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Principal Investigator, Jack G. Calvert, Soc. Sec. No. 554-24-2541
Professor and Chairman, Department of Chemistry
The Ohio State University

All other personnel are students, graduate or postdoctoral, and are not considered to be professional personnel.

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The Ohio State University Research Foundation
1314 Kinnear Road, Columbus, Ohio 43212

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

The major research objective of this investigation is the elucidation of the chemical reactions which occur in the usual polluted atmospheres. Three distinct areas of research will contribute to the program: (1) The study of the mechanism of the photooxidation of various organic and inorganic compounds which are common contaminants of the various urban atmospheres (sulfur dioxide, formaldehyde, higher aldehydes, ketones, etc. (2) The determination of the mechanism of the reactions photosensitized on the surface of solids commonly present in the polluted atmosphere, and an evaluation of the contribution these reactions make to the total air pollution problem. (3) The characterization of the reactive intermediates and transients formed in these systems and the quantitative determination of the rate constants for their various thermal reactions.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 1-1-68 5-31-73
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $96,756
MULTIPLE FUNDING
I.D. NUMBER 26 AAD-13

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800659

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Department of Chemistry, Case Western Reserve University, Cleveland, Ohio 44106

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

G. R. McMillan, 457-66-1042, Assoc. Prof. Chemistry, Dept. of Chemistry

TITLE OF PROJECT

Elementary Reactions in Polluted Atmospheres

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Certain elementary free radical processes occurring during photoinitiated oxidation in polluted air will be studied using the methods of photochemical kinetics. The reactions of alkoxy radicals with oxygen and nitrogen dioxide will be studied by photolysis of an appropriate alkyl nitrite in the presence of nitrogen dioxide and oxygen, and the competition followed by long path infrared spectrophotometry. The alkoxy-oxygen reaction has been suggested to be an important chain propagating step in the nitric oxide to nitrogen dioxide conversion and in the carbon monoxide cleanup cycle. This research may lead to assessment of the importance of this and other fates of alkoxy radicals in exhaust-polluted atmospheres.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 12-1-70 4-30-74

BUDGET PERIOD 5-1-72 4-30-73

ANNUAL EFFORT $34,152

MULTIPLE FUNDING —

I.D. NUMBER 26AAD-14

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801304

SUPPORTING AGENCY: **Environmental Protection Agency**

TITLE OF PROJECT

Photochemical Studies By ESR Spin Trapping Techniques

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Edward G. Janzen, 481-52-2850, Associate Professor, Chemistry Department

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The University of Georgia
Athens, Georgia 30601

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

The immediate objective is to develop a free radical ("spin") trapping technique for use in detecting and identifying free radicals present in the gas phase by a process which is similar to the one developed for free radicals in solution (E. G. Janzen and B.J. Blackburn, J.A.C.S., 90, 5909 (1968)). This technique entails the use of a nitroso or nitrone spin trap which after reaction with a free radical produces a stable nitroxide (a "spin adduct"). The spin adduct is detected by electron spin resonance (esr) and provides definitive proof of the existence of free radicals in solution (or in the gas phase as proposed). Certain features of the esr spectrum (the nitrogen and hydrogen hyperfine splitting) are characteristic for each radical trapped and thus can be used to identify the structure of the radical trapped. The development of the capability of monitoring the concentration of free radicals as a function of time is expected. The use of either molecular sieves or expandable clays (e.g. montmorillinite) as a solid phase host for incorporation of the spin trap is proposed. Free radicals produced in the gas phase will be passed through the spin-trap-host and trapped by the spin trap. The esr spectrum of the spin adduct will be obtained directly in the host or the spin adduct will be washed or exchanged out into solution and investigated in solution. This technique should prove to be very useful to photochemists and find application in a study of photochemical smog formation. After establishment of the technique a study of the effect of NO and NO_2 on the photochemical air oxidation of hydrocarbons and aldehydes will be initiated with objective of providing an understanding of the ozone (and other irritant) producing reactions in photochemical smog production.

DO NOT WRITE BELOW THIS LINE

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 5-1-70 5-31-73
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $26,401
MULTIPLE FUNDING
I.D. NUMBER 26AAD-15

SI-SIE-76A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801139

SUPPORTING AGENCY: **Environmental Protection Agency**

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The Aerospace Corporation, El Segundo, California

NAMES, SOCIAL SECURITY NUMBERS, TITLES AND DEPARTMENTS OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Norman Cohen, 560-46-8216, Manager of the Chemical Kinetics Section, Aerophysics Department

Karl Westberg, 048-30-9909, Member of the Technical Staff, Aerophysics Department

TITLE OF PROJECT

Free Radical Reactions in Polluted Air

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

An important unresolved problem in understanding photochemical smog formation is the mechanism of the conversion of NO to NO_2 in polluted atmospheres. This conversion accounts for the presence of ozone in polluted air. The well studied termolecular reaction $2NO + O_2 \rightarrow 2NO_2$ which has a room temperature rate constant of 7×10^3 M^{-2} sec^{-1} is much too slow to explain the rapid conversion of NO to NO_2 in the polluted atmosphere. Current thinking is that NO is oxidized to NO_2 by reactions of the type $RO_2\cdot + NO \rightarrow RO\cdot + NO_2$ where $RO_2\cdot$ is an alkylperoxy radical. Reactions of this type have never been studied. We propose to measure their rate constants at room temperature to see if they could be sufficiently rapid in the atmosphere to explain the observed rate of nitric oxide oxidation. We also propose to measure the rate constants of competing reactions including reactions between $RO_2\cdot$ and itself, carbon monoxide, sulfur dioxide and nitrogen dioxide. We propose to perform these studies in a 4 in. i.d. flow tube. The $RO_2\cdot$ radicals will be produced photochemically and their concentration measured by titration with HBr or NO. Mass spectrometric and optical measurements will be made to determine the concentrations of the other species involved.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 4-1-71 3-31-73
BUDGET PERIOD 4-1-72 3-31-73
ANNUAL EFFORT $36,000
MULTIPLE FUNDING —
I.D. NUMBER 26AAD-17

SI-SIE-78A; REV. 6-64

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800649

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION
University of California, Riverside, California 92502

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR
James N. Pitts, Jr., SS# 551-22-9719, Principal Investigator,
Professor of Chemistry, Department of Chemistry
Director, Statewide Air Pollution Research Center

TITLE OF PROJECT
Mechanisms of Photochemical Reactions in Urban Air

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Reactions of possible importance in photochemical air pollution are being investigated with a variety of techniques over a wide range of pressures and concentrations in homogeneous and heterogeneous vapor, liquid and solid systems. Research includes selected aspects of the photochemistry, spectroscopy, kinetics and mechanisms of photooxidation of common atmospheric pollutants, including PAN, oxides of nitrogen, monocyclic aromatic hydrocarbons, partially oxygenated hydrocarbons such as aldehydes and ketones, alkylating agents including epoxides, hydroperoxides and lactones, and polycyclic organic hydrocarbons. Long path (20-40 m) ir and uv techniques are used to identify unstable intermediates and products in the ppm range. Chemiluminescent reactions of ozone with olefins and organic sulfides are being investigated to determine emission intensities and the nature of the reaction processes. Applications of this phenomenon to improved air pollution monitoring instrumentation are being studied.

The o-nitrobenzaldehyde chemical actinometer originally developed on this project has been field tested by federal and state agencies and continues to be evaluated and improved.

Information derived from laboratory studies cited above is being applied to the design and execution of cooperative smog chamber studies of synthetic and real atmospheres. It is also being used to derive more accurate hydrocarbon and oxygenated hydrocarbon reactivity scales useful in consideration of exhaust control devices and fuel modifications.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 12-1-71 11-30-74
BUDGET PERIOD 12-1-71 11-30-72
ANNUAL EFFORT $79,458
MULTIPLE FUNDING
I.D. NUMBER 26AAD-18

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800984

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

California State Polytechnic College, San Luis Obispo, California

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

David C. Williamson
566-60-5732
Assistant Professor
Chemistry

TITLE OF PROJECT

An Investigation of Gas Phase Ozonolysis Rates

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Large discrepancies exist for second order rate constants for the reaction of ozone with internal olefins. Rate constants determined at reactant concentrations of microatmospheres differ appreciably from those determined at milliatmospheres. It is proposed to resolve these discrepancies by measuring the second order rate constants from microatmosphere concentrations to milliatmosphere concentrations using the same experimental method. It is proposed, as well, to quantitatively measure the reactivity of aldehydes and ketones with ozone in the gas phase. Evidence for chain decomposition of ozone will be sought.

A gas phase "stopped flow" apparatus will be constructed to perform the proposed research. Ozone concentrations will be measured by a multiple-reflection light absorption apparatus. From the time-decay curves of ozone concentration, second order rate constants can be calculated.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-1-72 5-30-75
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $6,950
MULTIPLE FUNDING —
I.D. NUMBER 26AAD-19

SI-SIE-7A A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800874

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The Pennsylvania State University
University Park, Pennsylvania 16802

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Julian P. Heicklen	093-24-6586	Associate Professor	Chemistry
Rosa Pena	192-42-9707	Research Associate	Meteorology
Angelo M. Fatta	129-32-4766	Research Associate	CAES
Edwin Cehelnik	174-38-8264	Post doctoral research	Asst. - Chemistry
Eckart Mathias	070-34-0570	Research Assistant	Chemistry
E-Chung Wu	244-72-8102	Research Associate	Chemistry

TITLE OF PROJECT

Reactions of Electronically Excited SO_2

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Our previous work on the studies of the photochemistry of SO_2 in the presence of CO, C_2F_4, or thiophene have indicated that the chemically important electronically excited states are not the luminescent states. Two new non-emitting states, a singlet and a triplet, were indicated. The existence of the triplet has now been confirmed by observations on the SO_2-sensitized biacetyl emission.

It is proposed to extend the studies of the photochemistry of SO_2 by (1) Performing SO_2-sensitized biacetyl emission studies in the presence of other gases such as, CO_2,CO , O_2, NH_3, H_2S, OCS, N_2O, H_2O, pyridine, pyrrole, thiophene, and hydrocarbons, (2) Performing photochemical studies on systems with NH_3, H_2S, N_2O, pyridine, and pyrrole, and (3) Performing photochemical studies with hydrocarbons where aerosols are produced, in order to study aerosol formation and growth. In the photochemical studies, experiments will be done in the absence and presence of N_2, NO, and O_2.

Products of the reactions, as well as quantum yields, will be determined as a function of pressure of reactants, intensity of the absorbed radiation, temperature, and incident wavelength. Analysis will be primarily by emission spectroscopy, gas chromatography, and infrared spectroscopy, though mass spectroscopy will be used when appropriate. For those reactions in which aerosols are produced, their particle size distribution as a function of irradiation time will be determined directly in a thermal diffusion chamber, as well as indirectly by pressure drop and light scattering measurements.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ___ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 3-1-72 2-28-74
BUDGET PERIOD 3-1-72 2-28-73
ANNUAL EFFORT $56,133
MULTIPLE FUNDING -
I.D. NUMBER 26 AAD-20

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PUBLICATION REFERENCE

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SIE NO.

AGENCY NO. 800586

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Stanford Research Institute
333 Ravenswood Avenue
Menlo Park, California 94025

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Dale G. Hendry, 570-50-7625, Senior Organic Chemist, Chemistry Laboratory
David M. Golden, 072-26-4332, Senior Physical Chemist, Chemistry Labortory
Sidney, W. Benson, 094-16-3273, Manager of Thermochemistry and Chemical Kinetics, Chemistry Laboratory
2 Postdoctoral Research Associates or Junior Staff Chemists, Chemical Laboratory

TITLE OF PROJECT

Reactions of Oxy Radicals with NO, NO_2, SO_2, and CO

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The objective of the proposed research is to study the reactions of hydroperoxy, acylperoxy, alkylperoxy, and alkoxy radicals with NO, NO_2, SO_2, and CO and to evaluate the rate constants in the gas-phase for the temperature range of 25-100°C.

The general procedure will be to generate the desired radical in a reaction where the radical can compete for NO, NO_2, SO_2 or CO along with a major reactant where the rate constant is known. In this way the rate constant may be evaluated for the reactions of interest. The reactions will be followed continuously by ir or uv. Both the disappearance of reactants and formation of products will be followed.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-9-72 6-8-73
BUDGET PERIOD 6-9-72 6-8-73
ANNUAL EFFORT $65,037
MULTIPLE FUNDING —
I.D. NUMBER 26AAD-21

SI-SIE-78A; REV. 6-64

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800949

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The Pennsylvania State University
University Park, Pa. 16802

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Julian P. Heicklen	093-24-6586	Professor Chemistry
I. C. Hisatsune	563-40-8315	Professor Chemistry
Rosa de Pena	192-42-9707	Research Associate Meteo

TITLE OF PROJECT

REACTIONS OF HALOCARBONS

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

It is proposed to examine the chemical reactions of halocarbon pollutants in the atmosphere. Particular emphasis will be placed on the chlorinated and fluorinated ethylenes. The approach will be to separate the reactions into 5 categories and study the isolated systems before examining interactions. The 5 types of reactions are with 1) O_3, 2) NO_2 and electronically excited NO_2, 3) $O(^3P)$, 4) HO and other free radicals, and 5) electronically excited SO_2.

With O_3, the O_3 decay will be monitored by its ultraviolet absorption. After the O_3 is exhausted and reaction is complete, gas chromatographic analysis will be made on the products. In some cases product formation will be followed by in situ infrared spectroscopy. When indicated low-temperature condensed phase experiments will be done to trap intermediates in order to help elucidate the mechanism.

The reactions of NO_2 with olefins can also be studied by optical absorption both in the visible and infrared, as with O_3. For both regions we have long path length reaction vessels to enhance sensitivity. In addition possible reactions of electronically excited NO_2 can be studied using a 7500 watt mercury arc source to excite the NO_2.

The reactions of $O(^3P)$ and HO will be studied to elucidate the mechanism of reaction for partially halogenated olefins, since the perhalogenated and unhalogenated olefins react by different mechanisms. In addition rate constants and the fate of the initial products in the presence of O_2 will be examined.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-9-72 6-8-73
BUDGET PERIOD 6-9-72 6-8-73
ANNUAL EFFORT $57,500
MULTIPLE FUNDING —
I.D. NUMBER 26 AAD-23

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800209

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Maine, Orono, Maine 04473

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Bentley, Michael D., 261-48-6074, Assistant Professor of Chemistry, Principal Investigator
------------------, Research Assistant

TITLE OF PROJECT

Photochemical Oxidation of Kraft Air Pollutants

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The major malodorous organic compounds of Kraft pulping operations are methyl mercaptan, dimethyl sulfide, and dimethyl disulfide. In initiating studies this year of the photochemical oxidation of these compounds we had two goals in mind: (1) to gain information concerning the feasibility of photochemical destruction of Kraft air pollutants by high energy irradiation as a pollution control method, and (2) to gather information having a bearing on the fate of these pollutants in the atmosphere. We have completed a product study of the photolysis of dimethyl sulfide in air under high energy irradiation conditions and presented the results of this study to the APCA meeting during the summer. We propose now to complete the study of dimethyl sulfide photooxidation by studying the effects on the reaction products and rate of variables including reactant concentrations, temperature, light energy, and light intensity. We also propose to conduct similar studies on methyl mercaptan and dimethyl disulfide. The spectroscopic, chromatographic, and wet chemical techniques developed in our dimethyl sulfide photooxidation product study will be used to accomplish these goals.

A final objective is to maintain at the University of Maine, a university in the heart of the Eastern pulp and paper industry and the center of training for many technicians and leaders in the field, a center of research and authoritative information related to the Kraft air pollution problem. This will be made more meaningful by the presentation of seminars, publications, and classroom teaching in this area.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-9-72 6-8-73
BUDGET PERIOD 6-9-72 6-8-73
ANNUAL EFFORT $5,816
MULTIPLE FUNDING
I.D. NUMBER 26 AAD-24

225

SI-SIE-75A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. AP 698

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Stanford Research Institute
Menlo Park, California 94025

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Sidney W. Benson, Chairman 094-16-9276
Department of Thermochemistry
and Chemical Kinetics

TITLE OF PROJECT

THEORETICAL CALCULATIONS OF THE ACTIVATION ENERGIES OF RADICAL AND MOLECULAR REACTIONS(RG)

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The extremely successful semi-ion pair model for predicting activation energies of 4-center addition and elimination reactions has opened up entirely new vistas in the area of a priori calculations of the activation energies for chemical reactions quite generally and for re-examining and extending the classical concepts of electronegativity to other important molecular properties.

We propose to use these models to develop formulae to predict activation energies for the following reactions:

(a) The effects of positive (e.g., CN, NO_2) and negative substituents (Cl, F, OH) on the activation energies of 1,2 and 1,4 addition and elimination reactions.

(b) Metathesis reactions of atoms + molecules and free radicals + molecules.

(c) Additions of radicals and atoms to double or triple bonds.

(d) Disproportionation rates for free radical reactions.

(e) Addition reactions involving $>C{=}O$; $-N{=}O$; $\backslash N{=}N-$; $N{\equiv}N$; $-C{\equiv}N$ and $\overset{H}{>}C{=}N-$ systems.

(f) Diels-Alder reactions, including endo and exo effects, which imply short range interactions. (At present we estimate $E_{activation}$ about 6 kcal too low.)

(g) 1,5 H-shift reactions.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 8-1-71 5-31-75
BUDGET PERIOD 8-1-71 5-31-73
ANNUAL EFFORT $41,173
MULTIPLE FUNDING
I.D. NUMBER 21 AAD: No task assigned; FY 72 funded.

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801435

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

PHOTOLYTIC OXIDATION IN THE PRESENCE OF NO_2

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

SIGMUND JAFFE, 045-10-0798 Professor of Chemistry
Department of Chemistry

NAME AND ADDRESS OF APPLICANT ORGANIZATION

California State College, Los Angeles
5151 State College Drive
Los Angeles, California 90032

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

The objective of this study is to continue the investigation of the photolytic oxidation of substances normally found in urban atmospheres. Many of the aldehydes, ketones, epoxides, acids and nitrogen containing derivatives owe their existence in air to reactions of oxygen atoms, ozone, and nitrogen dioxide with olefins. The principal source of the oxygen atoms is the photolytic dissociation of NO_2.

In recent work[15,16,17] I have proposed mechanisms and determined rate constants for processes taking place in the presence of NO_2 and olefins alone. It is the purpose of the present proposal to extend this study to systems containing O_2 as well as NO_2 and olefins. This will introduce several reactions of ozone along with those of NO_2. In addition, the concentrations of NO_2 and olefins will be reduced to approximate conditions more closely resembling those actually encountered in urban atmospheres. The analytical techniques will be refined to accomodate this change.

Although many of the reactions proposed here have been studied extensively, there are still several rate constants to be determined (see Tables of rate constants at the end of the proposal) and many questions concerning the mechanisms still exist.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ___ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 1/1/70 12/31/72
BUDGET PERIOD 1/1/71 12/31/72
ANNUAL EFFORT $30,000
MULTIPLE FUNDING
I.D. NUMBER 21 AAD (No task assigned; FY 72 funded)

SI-511-70A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801395

SUPPORTING AGENCY: **Environmental Protection Agency**

TITLE OF PROJECT

A New Instrument for Kinetic Studies of Air Pollution

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Kyle D. BAYES (531-32-3128), Associate Professor, Department of Chemistry

Edward W. GRAHAM (435-52-6635), Assistant Professor, Department of Chemistry

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of California, Los Angeles
405 Hilgard Avenue
Los Angeles, California 90024

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

The proposed research will attempt to develop a photoionization mass spectrometer which could be applied to a wide variety of air pollution problems. The instrument should have a sensitivity in the ppb range with a high selectivity for most pollutants. It is planned to use the instrument to measure the rate constants for certain reactions involving reactive intermediates, such as free radicals, NO_3, $O_2(a^1\Delta)$. The instrument should also be useful for monitoring pollutants in the atmosphere, although that is not part of the proposed study.

The aim of this study would be to provide critical rate constants which are needed in computer simulation studies. Certain neglected reactions would also be studied. The more reactions and rate constants that are known experimentally, the greater the probability that such simulation studies will reflect the actual environment. Computer studies are needed to establish priorities on pollutant controls.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-1-70 5-31-74
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $30,800
MULTIPLE FUNDING
I.D. NUMBER 2b AAD (No task assigned; FY 72 funded)

SI-SIE-18A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801298

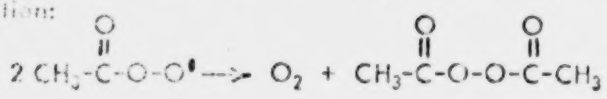
SUPPORTING AGENCY **Environmental Protection Agency**

PERACETOXY RECOMBINATION

Melvin J. Goldstein, 079-26-2716, Associate Professor
William A. Haley, 110-35-8174 Predoctoral Research Assistant
Samuel Fanso-Free, 128-44-5534 Predoctoral Research Assistant

Cornell University
Ithaca, New York 14850

We are concerned with the detailed mechanism by which light-induced air oxidation transforms physiologically innocuous hydrocarbons into poisonous, if not also corrosive, pollutants. This proposal focuses on the termination step of acetaldehyde oxidation ___ the recombination reaction:



$$2\,CH_3\text{-}\overset{O}{\overset{\|}{C}}\text{-}O\text{-}O^{\bullet} \dashrightarrow O_2 + CH_3\text{-}\overset{O}{\overset{\|}{C}}\text{-}O\text{-}O\text{-}\overset{O}{\overset{\|}{C}}\text{-}CH_3$$

but only because: (a) Much more is already known about the initiation and propagation processes which, together with termination, determine the observed rate. (b) This reaction also terminates the radical chain oxidation of those alcohols, ethers, and hydrocarbons that degrade to acetaldehyde in air. (c) Its detailed mechanism, while yet unknown, may well be applicable to all higher unbranched homologs. (d) Its abnormally high rate constant provokes fundamental questions of energy transfer in bimolecular reactions.

By tracing the path followed by an O^{17} label, initially present in acetaldehyde, we shall be able to distinguish among four possible transition states. By coupling this information with that obtained in a concurrent study of acetyl peroxide scrambling, we may also be able to trace the energy, initially present in the two peracetoxy radicals.

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-1-70 5-31-73
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $24,800
MULTIPLE FUNDING
I.D. NUMBER 26 AAD (No task assigned; FY 72 funded)

SI-SIE-7bA; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801255

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

The Reaction of $O(^1D)$ Atoms with Water Vapor

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

DeGraff, Benjamin A., 272-36-4930, Assistant Professor, Chemistry Department

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The University of Virginia, Charlottesville, Virginia 22901

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

The objectives of this research are to determine the relative rates of reaction for the various reactions of $O(^1D)$ atoms in the photolysis of moist ozone, to test which of the several possible mechanisms is responsible for the chain decomposition of moist ozone, and finally to learn as much other detailed information about the system as the techniques of flash and kinetic spectroscopy will allow.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 3-1-70 4-30-73

BUDGET PERIOD 5-1-72 4-30-73

ANNUAL EFFORT $15,527

MULTIPLE FUNDING —

I.D. NUMBER 21 AAD (No task assigned; FY 72 funded)

SI-SIE-76A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801253

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Western New York Nuclear Research Center, Inc., Power Drive, Buffalo, New York 14214

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

J. Y. Yang 514-28-6587 Senior Research Scientist Research Department

J. A. Sondel 121-32-3839 Junior Research Scientist Research Department

TITLE OF PROJECT

THE ROLE OF CHLORINE IN PHOTOCHEMICAL AIR POLLUTION

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The purpose of our proposed research is to examine potential air pollution problems arising from a release of chlorine into the atmosphere. The chlorine pollution in air may exist in the form of molecular chlorine, hydrogen chloride and volatile chlorocarbons. These species may be interconverted as transient or final products in atmospheric reaction processes. The known efficiency of molecular chlorine as a photochemical initiator underlines a potential contribution to photochemical smog even at low chlorine contents.

Atmospheric chlorine pollution is expected mainly to arise from industrial sources. In the United States, major chlorine industries are concentrated heavily in the Niagara Falls, New York and Gulf Coast, Texas areas. Chlorine pollution may be a significant problem in these localities.

This proposal is designed to explore photochemical chlorine reaction processes which may contribute to smog-formations. The main objective is to obtain the information necessary for establishing suitable standards to insure satisfactory air qualities in every urban center.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-1-71 5-31-73

BUDGET PERIOD 6-1-72 5-31-73

ANNUAL EFFORT $11,600

MULTIPLE FUNDING —

I.D. NUMBER 26AAD (No task assigned; FY 72 funded)

SI-SIE-7A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE. NO.

AGENCY NO. 801210

SUPPORTING AGENCY: **Environmental Protection Agency**

ABBREVIATED TITLE OF PROJECT

Aspects of Chemical Reactions of Air Pollutants

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Keiji Morokuma, 082-40-2211, Assistant Professor of Chemistry, Department of Chemistry

Other to be appointed.

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Rochester
Rochester, New York 14627

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

Though it is well known that the photochemical smog formation is initiated by photodecomposition of nitrogen dioxide and partly of organic aldehydes or ketones, the nature of these primary photodissociation processes is not well understood or is rather confused experimentally. The object of the proposed research is to establish details of the kinetics of the processes theoretically.

The objectives of theoretical works are (1) calculation of the potential energy surfaces relevant to photochemical primary processes and (2) calculation of trajectories of the systems on these potential energy surfaces.

The first system we plan to study is formaldehyde. The excitation energy dependence of quantum yield or rate of two competing photodissociation processes leading to H+HCO and H_2+CO, respectively, is to be studied. First, the potential surfaces of ground and excited states are calculated with an ab initio SCFCI method. Once the potential surfaces are obtained, trajectory studies on these surface will be carried out, which will clarify the mechanisms and energetical dependence of two processes as well as the product energy distribution.

Nitrogen dioxide and nitrous oxide will be next systems. For the former the shape of the reaction path and its relationship to the product energy and momentum distribution will be studied, and for the latter the identification of the actual photodissociation mechanism out of several possibilities will be emphasized.

LEAVE BLANK DO NOT WRITE BELOW THIS LINE

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 5-1-70 9-30-72

BUDGET PERIOD 5-1-71 9-30-72

ANNUAL EFFORT $4,800

MULTIPLE FUNDING —

I.D. NUMBER 21 AAD (No task assigned; FY 72 funded)

[illegible]

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801138

SUPPORTING AGENCY **Environmental Protection Agency**

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Drexel University
Philadelphia, Pennsylvania 19104

NAMES, SOCIAL SECURITY NUMBERS, OFFICIAL TITLES, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Dr. William A. Guillory
410-68-9178
Associate Professor of Chemistry
Department of Chemistry

Postdoctoral Fellow(to be designated)

TITLE OF PROJECT

Matrix-Isolated Spectra of Nitrogen Oxides

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

It is proposed to continue using the method of matrix-isolation to make a systemic study and identification of the stable and unstable oxides of nitrogen trapped in various environments at liquid helium/hydrogen temperature. The results of this study will not only prove valuable to the fields of spectroscopy and kinetics, but also to the problem of photochemical air pollution. It is well known that reactions involving oxides of nitrogen play an integral role in the production of air pollutants, however, the elementary processes and intermediates have proven difficult to ascertain. Our studies to date have indicated that this method is ideal in identifying some of these proposed intermediates. We have further observed that ultraviolet photolysis of selected stable molecules produces atomic species which are mobile in matrices, allowing characterization of elementary atomic mechanisms which occur in the atmosphere.

Therefore, investigation of these two facets of photochemical air pollution, i.e. identification of stable and unstable pollutants and the characterization of elementary processes resulting from photochemical absorption, is proposed.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 51-71 6-30-73
BUDGET PERIOD 5-1-71 6-30-73
ANNUAL EFFORT 10,100
MULTIPLE FUNDING
I.D. NUMBER 21 AAD (No task assigned; FY 72 funded)

SI-SIE-7bA; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801101

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

Molecular Beam Kinetics: Oxygen Atom Reactions

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Dudley R. Herschbach, 562-44-2500, Professor of Chemistry
1 postdoctoral fellow
5 graduate students

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Harvard University, 12 Oxford Street, Cambridge, Mass. 02138

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

During the past decade, my laboratory has pursued molecular beam studies of the dynamics of elementary chemical reactions. In these experiments, the time resolution in effect is reduced to the duration of a single collision, of the order of 10^{-13} sec. Truly elementary chemical events thus can be isolated and the forces which govern them characterized in terms of the initial conditions most favorable for reaction and the distributions in angle and energy of the products. The relation of these single-collision reactive scattering studies to conventional chemical kinetics is thus quite analogous to that between molecular structure studies and thermochemistry. Our general aim in this work is to elucidate the molecular dynamics of making and breaking chemical bonds. Here we propose the first beam studies of oxygen atom reactions, and also the first studies of addition reactions. We believe these processes offer a unique opportunity to elucidate the dynamics of intramolecular energy transfer and rearrangements involving migration of hydrogen atoms.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 4-1-71 3-31-74
BUDGET PERIOD 4-1-72 3-31-73
ANNUAL EFFORT $49,900
MULTIPLE FUNDING —
I.D. NUMBER 2b AAD (No task assigned: FY 72 funded)

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801099

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

E. P. R. Study of Photoreactions in the Atmosphere

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

E. Wasserman 123 24 1050
Professor, School of Chemistry
Graduate and post-doctoral students as yet unspecified.

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Rutgers, The State University, New Brunswick, N. J. 08903

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

This program is to be devoted to an investigation of the possible sources and immediate fate of active species in the atmosphere particulary Δ-O_2. Recently, we have demonstrated that gas-phase photosensitization by aromatic species is an efficient means for the generation of the 'Δ state and a reasonable process in polluted air. We intend to examine other possible sources of 'Δ which might be found in the atmosphere. We also plan to study reactions which may involve 'Δ-O_2 as a reactant. Of particular interest will be those processes which may be involved in the conversion of NO to NO_2.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 4-1-70 6-30-72
BUDGET PERIOD 4-1-71 6-30-72
ANNUAL EFFORT $6,900
MULTIPLE FUNDING —
I.D. NUMBER 21b AAD (No task assigned; FY 72 funded)

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800902

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Colorado
Boulder, Colorado 80302

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Stewart J. Strickler, 511-32-9320, Associate Professor of Chemistry, Department of Chemistry

TITLE OF PROJECT

Photochemistry of Sulfur Dioxide and Other Compounds

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Sulfur dioxide is a common constituent of polluted atmospheres, and its photochemical reactions probably contribute to the complex chemistry occurring in the atmosphere. Yet the possible photochemical processes are presently very poorly understood. Several unique approaches are suggested here for investigating the photochemistry of sulfur dioxide and other compounds. These methods are based on some preliminary studies which have already been carried out in this laboratory in another connection. The proposed lines of attack are the following:

1. Studies of the photochemical reactions of SO_2 with various organic and inorganic substances in rigid glasses at 76°K. or lower: Preliminary studies show that reactions which have a high probability of occurring in the atmosphere can be studied by this method. This approach is unique because the conditions can be carefully controlled and the primary products can be studied without the complications due to further reaction. For example, some of the reactions have been shown to produce free radicals, and these can be studied while trapped in the glass, whereas they disappear immediately upon melting.

2. Excited state lifetime measurements: These will be used to determine the actual rate constants for the reactions observed, both in the gas phase and in rigid media.

3. Spectroscopic studies using absorption and emission techniques: Even after many years of study, the excited states of SO_2 have never been positively identified. Some new methods are proposed in an effort to accomplish this.

4. Theoretical treatment of the excited states to determine the electron distributions: An understanding of these distributions is essential to a fundamental understanding of the photochemical reactivity of sulfur dioxide.

These studies should lead to a better understanding of the role of sulfur dioxide in atmospheric chemistry. As the work proceeds, it is expected that the methods will be extended to other molecules of interest in air pollution, for example nitrogen oxides, oxygen, ozone, and sulfur trioxide.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 4-1-71 5-31-74
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $26,900
MULTIPLE FUNDING —
I.D. NUMBER 26 AAD (No task assigned; FY 72 funded)

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800757

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

Conversion of NO to NO_2 in Polluted Atmospheres

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Heicklen, Julian P.	093-24-6586	Associate Professor	Chemistry Department
Engel, Alfred J.	070-20-1486	Associate Professor	Chem. Eng. Department

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The Pennsylvania State University
207 Old Main Bldg
University Park, Pa. 16802

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

We intend to examine the reactions which are most likely to influence the conversion of NO to NO_2 in urban atmospheres. Probably the conversion occurs by the reaction between NO and alkylperoxyl radicals, RO_2,

$$RO_2 + NO \rightarrow RO + NO_2.$$

Therefore we will study the reactions of pertinence in the production and removal of RO_2. We intend to determine the efficiency of RO_2 production from the photo-oxidation of aldehydes and ketones. Furthermore the reaction of RO_2 with NO will be examined to see if NO_2 is a product and, if so, to determine the rate constant for the reaction. Finally the rate constant will be measured for the predominant step in RO_2 removal, namely

$$2RO_2 \rightarrow 2RO + O_2.$$

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD	4-1-70	5-31-73
BUDGET PERIOD	6-1-72	5-31-73
ANNUAL EFFORT	$38,200	
MULTIPLE FUNDING		
I.D. NUMBER	26 AAD (No task assigned; FY 72 funded)	

SI-SIE-7BA; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800402

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

Mechanisms of Photooxidation

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Christopher S. Foote
043-28-4164
Associate Professor of Chemistry
Department of Chemistry

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of California
Los Angeles, California 90024

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

Evidence for the multiplicity of mechanisms in photosensitized oxidations is presented. A program to identify each of the possible mechanisms (two singlet states of oxygen, hydrogen abstraction, O_2^-, and certain other possibilities) is proposed. The relevance of this work to the photodynamic effect and the mechanism of certain types of carcinogenesis will be considered. The role of flavins as photosensitizers will be studied. Certain possible reaction intermediates can be made by non-photochemical routes, and the reactions of these compounds will be compared with those of the photochemical intermediates, using carefully chosen experimental conditions. The role of metal ions and carotenoids as inhibitors will be studied.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 3-1-68 5-31-73
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $16,000
MULTIPLE FUNDING —
I.D. NUMBER 26 AAD (No task assigned; FY 72 funded)

SI-SIE-7aA; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800425

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

Kinetics and Thermochemistry of Free Radicals

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Sidney W. Benson -- 094-16-9276, Chairman, Dept. of Thermochemistry and Chemical Kinetics
David M. Golden -- 072-26-4332, Physical Chemist
Gilbert R. Haugen-- 557-42-9436, Physical Chemist
Post-Doctoral Associate
Post-Doctoral Associate

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Stanford Research Institute
Menlo Park, California 94025

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

It is proposed to use the recently developed I_2/HI techniques to study quantitatively the kinetic and thermochemical properties of organic free radicals with emphasis on the biologically important, but little known, class which contain oxygen atoms. It is expected that the studies will lead to accurate C-H bond dissociation energies in ethers, ketones, carboxylic acids, esters and phenols (quinones). From these and related thermochemical data, it will be possible to obtain "resonance" energies in the parent compounds. In addition, the recent electrostatic model for prediction of activation energies, which has been so successfully applied to 4-center reactions, will be examined for its application to other pi bond systems.

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METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 11-1-71 10-31-72
BUDGET PERIOD 11-1-71 10-31-72
ANNUAL EFFORT $67,320
MULTIPLE FUNDING —
I.D. NUMBER 26 AAD (No task assigned; FY 72 funded)

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800374

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

Studies of O Atom Reactions of Atmospheric Importance

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Dr. Richard B. Timmons
110-36-7515
Associate Professor
Department of Chemistry

One Graduate Student
(to be appointed)

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The Catholic University of America
Washington, D. C. 20017

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

We propose to apply the method of electron spin resonance spectroscopy to the study of the reaction kinetics of oxygen atoms. The oxygen atoms will be produced by photolysis and by electrodeless discharge. Attention will be focused on O atom reactions of significant atmospheric importance. This will include the reactions of O atoms with aromatic molecules, such as benzene or toluene, as well as reactions with selected alkenes and alkanes. We are particularly interested in investigating O atom reactions in the presence of small added amounts of nitrogen oxides and sulfur dioxide.

The e.s.r. method of obtaining kinetic data has been demonstrated to be significantly faster than time consuming conventional methods. Despite the fact that this proposal contains a rather extensive program of investigations, we feel that results will be obtained rapidly enough by the e.s.r. method to allow for a very broad study program.

In addition to the kinetic rate data obtained via the e.s.r. measurements, we propose to carry out selected sampling of the gaseous products. These products will be determined by gas chromatography and mass spectrometry. The dependence of the formation of oxygenated compounds such as aldehydes and ketones on such variables as spin state of the oxygen atom, reaction temperature and presence of inorganic oxides are the fundamental problems we hope to answer.

For reasons outlined in this proposal we feel that the continuation of our research efforts on reactions of significance to air pollution can best accomplished by the proposed gas flow studies employing e.s.r. detection. The method is exceedingly pricise and unequvocal. In addition many of the difficulties we have encountered in the current studies will easily be avoided.

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 2-1-72 4-30-73
BUDGET PERIOD 5-1-72 4-30-73
ANNUAL EFFORT $13,887
MULTIPLE FUNDING ______
I.D. NUMBER 26AAD (No task assigned; FY 72 funded)

SI-SIE-7A A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800655

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Montana, Missoula, MT 59801

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Erickson, Ronald E. - 532-26-0801 - Associate Professor - Department of Chemistry

Yates, Leland M. - 517-30-3995 - Associate Professor - Department of Chemistry

TITLE OF PROJECT

(RC) Kinetics of ~~the~~ Reaction of Ozone with Sulfur Compounds

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

We propose to study the chemical kinetics of the reaction between ozone and the low molecular weight sulfur compounds, sulfur dioxide, hydrogen sulfide, methyl mercaptan, and dimethyl sulfide. Gas phase kinetic studies on methyl mercaptan and dimethyl sulfide ozonations will utilize the method of Hales (Diss., U. of Michigan, 1968) who studied the hydrogen sulfide reaction. Liquid phase (water) studies will be carried out on the compounds using a stopped flow technique.

The study should yield mechanistic information on exact nature of such ozonations. All of the molecules to be used in this study are important in air pollution and water pollution.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 3-1-71 5-31-74

BUDGET PERIOD 6-1-72 5-31-73

ANNUAL EFFORT $29,750

MULTIPLE FUNDING —

I.D. NUMBER 26 AAD (No task assigned; FY 72 funded)

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Mathematical Modeling of Simulated Photochemical Smog

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Philip M. Roth, Project Director

Dr. John H. Seinfeld
Mr. Thomas Hecht - Consultants

Dr. Mei-Kao Liu, Senior Analyst

Dr. Marcia C. Dodge
(EPA, NERC, DCP, ACPB)

NAME AND ADDRESS OF INSTITUTION:
Systems Application, Inc., 9418 Wilshire Blvd., Beverly Hills, California 90212

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The object of this work is to develop a kinetic mechanism describing photochemical smog formation that can be incorporated into meteorological models to make air quality assessments. The scope of work of this contract is divided into two phases. At the outset, the contractor is preparing a report outlining (1) the current state of the art of photochemical models and the problems encountered in the validation of these models and (2) the type of chamber data, field data and laboratory studies that need to be undertaken to elucidate atmospheric chemistry. The second phase of the work on which most of the emphasis is being placed is the analysis of smog chamber data. The contractor will (1) formulate a system of rate equations to describe the photochemical reaction occurring in the chamber, (2) solve the differential equations to obtain time-concentration profiles for the various species and (3) modify the mechanism until the best fit to the experimental data is obtained. The object is to describe the photochemistry of the smog chamber with the simplest possible mechanism and employ it in the modeling of the atmosphere.

Period of Performance: June 24, 1973 - June 23, 1973

METHOD OF SUPPORT (CHECK ONE)
- __ INTRAMURAL
- _X_ CONTRACT 68-02-0580
- __ GRANT
- __ INTERAGENCY AGREEMENT
- __ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Marcia C. Dodge

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 6/72 - 6/73
B. $46,241
C. N/A
D. OAP 26 AAD, Task (Related to Task 10)

SI-SIE-13A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800805

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Princeton University Observatory, Princeton, New Jersey 08540

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

William Hayden Smith, Research Physicisit, S.S. 406-52-2023, Astrophysical Sciences
Joachim Born, Engineering Associate, S.S. 099-30-3794, Astrophysical Sciences
Research Associate, unnamed
Electronic Technician, unnamed

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TITLE OF PROJECT

Remote Detection of Atmospheric Pollutants

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Raman scattering from atmospheric molecules may be detected remotely using the sampling technique devised by us. The use of a Fabry-Perot interferometer allows the gain in signal to be more than ten thousand over usual methods. Concentrations down to tens of parts per million of gases should be detectable at ranges up to 0.5 km. The technique has the advantages of low cost of the sampling apparatus, stability of the instrument, readout in a form that is directly a function of the molecular concentration and temperature, and that requires no spectroscopic knowledge on the part of the operator. The apparatus is small and easily portable and can be used with optics of modest quality for light collection. The development and utilization of the method requires the support of an intense laboratory and computational program for providing the means for simple field interpretation of the Fabry-Perot interferometer transmission patterns in terms of the type, amount and if required, temperature of the molecule giving rise to the Raman scattering. The technique will also be extended to the use of fluoresence spectra for molecular species. In addition to the value for atmospheric pollutant detection the method will be powerful in the study of molecular spectra for the determination of rotational constants, and vibrational interaction constants such as the Fermi Resonance interaction matrix elements which can not be obtained so easily or as accurately by other methods of spectroscopy. These results are natural offshoots of the proposed research program.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 3-1-72 2-28-73
BUDGET PERIOD 3-1-72 2-28-73
ANNUAL EFFORT $64,615
MULTIPLE FUNDING —
I.D. NUMBER 26 AAP-28

243

PHS-398

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of In-Situ Prototype Diode Laser System to Monitor SO_2 Across the Stack

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. E.D. Hinkley, Principal Investigator, Advanced Sensors Group, Optics Division
John S. Nader, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: Massachusetts Institute of Technology, Lincoln Laboratory, Lexington, Massachusetts 02173

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A research prototype diode laser system shall be constructed for in-situ monitoring of SO_2 in a smoke stack, using an across-the-stack absorption method for characteristic infrared radiation. The system shall be capable of measuring SO_2 concentrations down to the 100 ppm level in the smokestack environment up to 10 meters in diameter and would be adaptable to other pollutant gases by the substitution or addition of appropriate diode lasers. Cryogenic cooling of the laser in this prototype system shall be provided by liquid helium in a refillable dewar. The system shall be modular in design composed of a diode laser and its current programmer, calibration cell, infrared detector and itssupply and measurement electronics. The measured SO_2 level shall be displayed on a digital voltmeter, and on a strip chart recorder and on a digital printout. The vacuum pumping system for occasional evacuation of the dewar will not be provided as a part of the prototype. When completed, the prototype system shall be tested on a smoke stack recommended by EPA. The system shall be delivered to EPA with any modifications as deemed necessary by the field tests.

Period of Performance 6/24/72 - 6/23/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
x CONTRACT No. 68-02-0569
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 6/72 - 6/73
B. $173,906
C. N/A
D. ROAP 26 AAP Task 13

SI SIE-19A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Development of Field Prototype Sensor for In-situ Monitoring of Stationary Source Pollutants Based on Gas-cell Correlation Spectroscopy

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Darrell E. Burch, Project Director
Mr. David A. Gryrnak
Mr. John D. Pembrook
Dr. William F. Herget, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: Infrared and Atmospheric Physics Dept., Aeronutronic Division, Philco-Ford Corporation, Newport Beach, California 92663

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Purpose: The aim of the subject contract is to use the gas-cell correlation spectroscopy technique to develop a field-prototype sensor for in-situ (across-the-stack) monitoring of stationary source emissions. The pollutant species to be detected are HF, HCl, SO_2, SO_3, NO, and CO. It is anticipated that this field-prototype instrument will lead directly to the development of commercial instruments that will continuously monitor the average effluent concentrations of any desired species.

Scope of Work: The contractor, as an independent institution and not as an agent of the government, will design and fabricate a field-prototype gas-cell correlation spectrometer system for in-situ monitoring of HF, HCl, SO_2, SO_3, NO, and CO concentrations in stationary emission sources. Individual components of the system, such as the source and receiver units, shall weigh no more than 35 pounds. Maximum light beam diameter at the stack walls shall be two inches. Design and selection of individual components, such as radiation source, method of producing a gas-cell modulation of the light beam, optimum wavelengths and associated detector (ambient temperature operation) and electronics systems are to be selected by the contractor. The processed detector signal shall be proportional to species concentration and displayed on a strip chart recorder. Overall system response time for zero to full scale deflection shall be 10 seconds or faster. The system shall include provision for field calibration of the instrument with an accuracy of ±5 percent using cells containing known pollutant concentration. There will be provision for varying the focus of the instrument since pathlengths can range from 5 to 30 feet.

Period of Performance: 6/28/72 - 6/27/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT 68-02-0575
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 6/72-6/73
B. $60,208
C. N/A
D. ROAP 26 AAP , Task 14

[illegible]

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Conversion of Monsanto Model 3409 Chemiluminescent Ambient Air NO_x Monitor to Measure NO_x and SO_2 from Stationary Sources

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Huel C. Tucker, Project Director
Dr. Frederic C. Jaye, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: Monsanto Research Corporation, Dayton Laboratory, 1515 Nicholas Road, Dayton, Ohio 45407

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In early 1971, Monsanto Research Corporation developed and constructed a prototype NO_x monitor for ambient air utilizing the chemiluminescent reaction of oxygen atoms and the oxides of nitrogen. Evaluation of this unit has now been completed by the ambient air quality measurements program. The design and construction of this unit is such that a material savings in time and costs may be made by converting this unit for stationary source SO_2 and NO_x measurements rather than designing and constructing a new prototype from the start. Conversion of the existing unit will serve to demonstrate the technology for stationary source measurements.

This contract will cover the services required to convert the existing Monsanto Model 3409 air quality NO_x monitor to stationary source usage. The contractor shall modify the existing Monsanto Model 3409 ambient air NO_x monitor to simultaneously measure stationary source SO_2 and NO_x emissions in the following ranges:

SO_2 - 0-200 ppm. 0-500, 0-1000, 0-3000 ppm
NO_x - 0-200 ppm, 0-500, 0-1000, 0-3000 ppm

The unit shall have equivalent responses to NO and NO_2 or mixtures thereof without the use of a conversion device.

Period of Performance 5/23/72 - 11/22/72

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
x CONTRACT No. 68-02-0554
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 5/72 - 11/72
B. $33,526
C. N/A
D. ROAP 26 AAP Task 15

[illegible] REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development and Fabrication of a Prototype Mass Emission Data System

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

W. L. Robinson, Project Manager

Dr. Fred C. Jaye, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Systems Technology Associates, Inc. 2990 Telestar Court, Falls Church, Va. 22042

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Design, construct and deliver a mass emission data handling system using current mini computer technology. The unit shall exercise real time control over sampling, calibration and adjustments of source monitoring equipment for SO_2, NO_x, particulate, CO, CO_2, O_2, velocity, temperature, and visible opacity. The outputs will be in terms of mass emission units for selected parameters.

The contract contains an information release restriction in clause 12, Rights in Data.

Period of Performance 6/28/72 - 12/27/72

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

x CONTRACT No. 68-02-0658

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 6/72 - 12/72

B. $41,200

C. N/A

D. ROAP 26AAP Task 17

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development and Fabrication of a Simulated Stationary Source Experimental Facility

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Larry W. Anderson, Project Manager
Dr. Fredric C. Jaye, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Aerotherm Division, Acurex Corporation
485 Clyde Avenue, Mountain View, California 94040

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This program provides for the design, fabrication, and installation of a closed-loop wind tunnel capable of simulating temperature, humidity, pollutant emissions levels, and other operating characteristics of stationary pollutant sources. This unit will be used for experimental work concerning sensor-source interfaces and to attempt to answer fundamental particulate sampling questions.

This contract contains an information release restriction in clause 12.

Period of Performance: 6/29/72 - 6/28/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
[✓ CONTRACT]* 68-02-0584
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 7/72-6/73
B. $128,500
C. N.A.
D. ROAP 26AAP, Task 18,

SI-SIE-78A; REV 8-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of Instrumentation for Measurement of Stationary Source Aldehyde, Organic Acid and Amine Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. D. Bode, Project Manager, Bendix Research Laboratories

Dr. Fred C. Jaye, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Bendix Research Laboratories, 20800 Ten and One-Half Mile Road, Southfield, Mich. 48076

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Current investigation of the state of the art in continuous monitoring of sulfur compounds emitted by pulp and paper mills and aldehydes, organic acids and amines emitted from animal rendering plants indicates existing instrumentation for sulphur compounds but no available equipment for measurement of animal rendering plant emissions. Available literature discloses that the principal odorant species from rendering plants are aldehydes and organic acids with the amines comprising a very low percentage of total rendering plant emissions.

The purpose of this contract is to examine available manual and laboratory methods for the sampling and analysis of aldehydes, organic acids, and amines from rendering plants with the aim of modifying existing process type instrumentation to produce prototype continuous automated instrumentation for these emissions from sources such as animal rendering plants.

Period of Performance 5-26-72 - 1-25-73

METHOD OF SUPPORT (CHECK ONE)

- ☐ INTRAMURAL
- ☒ CONTRACT No. 68-02-0551
- ☐ GRANT
- ☐ INTERAGENCY AGREEMENT
- ☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A 5/72 - 1/73
B $56,053
C N/A
D ROAP 26 AAP, Task 21

SI-SIE-79A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Evaluation and Modification of Fluoride Sampling and Analytical Methods

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. John B. Koogler, Project Director
Dr. Roy L. Bennett, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: Environmental Engineering, Inc., 2324 S.W. 34th Street,
Gainesville, Florida

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A proposed method of sampling and analyzing stationary source emissions for water soluble fluorides has been proposed based on laboratory work conducted by another contractor under Contract 68-02-0099. This program will provide for the field verification of this method in aluminum reduction plants, phosphate rock processing plants, iron and steel mills, and glass and ceramic manufacturing.

The contractor is subject to an information dissemination restriction in Clause 12 of the contract.

Period of Performance: 8/24/72 - 5/23/73

METHOD OF SUPPORT (CHECK ONE)

- __ INTRAMURAL
- X CONTRACT 68-02-0600
- __ GRANT
- __ INTERAGENCY AGREEMENT
- __ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 8/72 - 5/73
B. $62,929
C. N/A
D. ROAP AAP Task 23

SI-SIE-7RA, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development and Fabrication of a Prototype Interferometer

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. William H. Smith, Principal Investigator
~~Assistant~~ Professor, Astro-Physics Department

Dr. William F. Herget, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: Princeton University, Office of Research and Project Administration, 510 New South Building, Princeton, New Jersey 08540

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The contractor shall design, develop, fabricate, and evaluate a prototype scanning Fabry-Perot Interferometer. The purpose of the effort is the development of a light-weight, portable interferometer for measuring rotational Raman scattering from smoke stack pollutants, with emphasis on nitrogen oxide detection.

The interferometer shall be driven through a micrometer drive by either a geared-down synchronous or stepping motor. The FPI system optics shall be 1 1/2 inches in diameter and suitable for use in the 4500 Angstrom spectral range. The weight/volume design goals for the interferometer system shall be as follows: weight - 50 lbs or less; volume - one cubic foot or less.

The contractor shall conduct a theoretical analysis which shall include development and running of a computer program to produce transmission patterns for a Fabry-Perot Interferometer illuminated by molecular spectra derived from Raman and Fluorescence scattering. The contractor shall evaluate the ability of the prototype FPI to perform atmospheric sampling tasks. This evaluation shall involve the use of realistic line shapes and the variation of molecular parameters as is necessary to evaluate system performance capability.

Period of Performance: 8/9/71 - 8/8/72

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT 68-02-0327
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______________________

A. 8/71-8/72
B. $37,324
C. N/A
D. ROAP 26 AAP, Task 28

SI-SIE-14A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Lab and Field Evaluation of Dalmo-Victor and Barringer Units as Remote Source Instruments

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. M. Barnes, Jr., Research Chemist
Mr. Roosevelt Rollins, Electronics Engineer
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Dalmo-Victor is a four-channel IR radiometer for remote sensing of SO_2 emissions from power plants. The Barringer instrument is a correlation spectrometer, which uses the sun as a source for stack monitoring of SO_2 and NO_2. These instruments are being evaluated on power plant stacks for use as routine monitors. Parameters such as moisture, particulate loading, sunlight level (for the Barringer) etc. are being studied.

Project initiated 9/71; anticipated completion date 6/76.

ETHOD OF SUPPORT (CHECK ONE)

_x INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Dr. H.M. Barnes (JSN)

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $16,800
C. N/A
D. ROAP 26 AAP, Task 33

SI-SIE-78A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Stationary Source Instrument Evaluation, Review and Acceptance

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Fredric C. Jaye, Chemist
Stationary Source Emissions Measurement Methods Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This is an intramural program to provide the administrative and technical base for a program of performance test review and EPA acceptance of stationary source monitoring systems for new source performance standards monitoring requirements.

NOTE: The existance of this task is dependent upon EPA policy decisions which have not yet been made concerning this program. As such, release of this task sheet would constitute premature release of draft internal working documents.

Project initiated 9/71; anticipated completion 12/75.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Dr. Fredric Jaye (JSN)

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____

A. 7/72-6/73
B. $8,400
C. N/A
D. ROAP 26 AAP, Task 34

SI SIE-28A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
A Dilution Device for Coupling Monitors to Source Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

James B. Homolya, Research Chemist
Robert J. Griffin, Physical Science Technician
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental
Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The coupling of continuous gaseous source monitors to stacks or ducts usually requires some degree of sample conditioning. Conventional techniques involve extracting a stack gas sample via probe and transporting the sample to analyzers through heated inert tubing to prevent moisture condensation and loss of sample. The tubing must be either steam-traced or electrically heated. Particulate matter is usually filtered at the probe inlet and moisture present in the sample line (often 10-12% H_2O) is removed at the monitor by condensation. Such methods are costly and still suffer from varying degrees of sample losses. A novel device has been designed and constructed to eliminate the problem of moisture condensation and particulate entrainment by diluting the gas sample immediately within the stack environment. A rotating perforated-disc placed in the stack gas atmosphere is used to extract a small volume of gas which is mixed with a metered stream of diluent. The mixture can then be analyzed directly by ambient air or source-level monitors without the need of heated sample lines, particulate filters, or refrigerated driers. A prototype of the disc-diluter has been designed to encompass a range of dilution ratios of from 10:1 through 1500:1. The device can be readily inserted through any standard 3" sample port and requires minimal maintenance. The choice in using an ambient or source level monitor and the appropriate diluting ratio is dependent on the initial pollutant concentration as well as the moisture and particulate levels. Laboratory and field studies have been carried out using both ambient and source level SO_2 monitors.

Initiated 7/1/72 and laboratory prototypes are under evaluation. Completion expected by 5/1/73.

METHOD OF SUPPORT (CHECK ONE)

- X INTRAMURAL
- __ CONTRACT
- __ GRANT
- __ INTERAGENCY AGREEMENT
- __ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR James B Homolya

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $19,600
C. N/A
D. ROAP 26 AAP, Task 44

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Laboratory Development and Field Evaluation of Probe Tip and Boundary Layer Dilution System

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

James B. Homolya, Research Chemist
Charles E. Rodes, Engineer
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A possible approach for source emission measurement is the concept of interfacing ambient air monitors to stacks with dilution devices. We have developed several prototype systems in our laboratories for this purpose. Prototype design has varied from mechanical approaches to probe-tip dilution and/or extraction techniques. The program was initiated in 7/1/72 and several designs are now undergoing field tests. The project will be ongoing through the fiscal year.

METHOD OF SUPPORT (CHECK ONE)
X_ INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR James B. Homolya

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $19,600
C. N/A
D. ROAP 26 AAP, Task 45

SI-SIE-78A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Laboratory Investigation of Selective Hydrocarbon Instrument Techniques

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

James B. Homolya, Research Chemist
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The study will entail an investigation and development of specialized chromatographic techniques for source emission measurement of hydrocarbons by industry classes. Paint and varnish, acrylonitrile, and phthalic anhydride manufacturing operations will receive prime consideration. Hopefully, measurement systems, tailored for the emissions of each of these industries can be developed for field use. The program initiation is planned for 3/1/73 and will probably continue into FY 73.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72-6/73
B. $8,400
C. N/A
D. ROAP 26 AAP, Task 46

SI-SIE-[illegible]A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Equip Mobile Laboratory for Field Sampling and Test Work

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Charles E. Rodes, Chemical Engineer
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A 15-foot trailer will be instrumented to facilitate field testing of equipment developed by the Stationary Source Emission Measurement Methods Section. Modular mounting is planned to allow instruments to be added or removed depending on the type of testing to be performed. The instruments to be installed include a digital temperature measurement system, a stack dewpoint monitor, a digital data reduction system, and a small sample conditioning system.

Period of Performance: 4/1/73 - 5/1/73

METHOD OF SUPPORT (CHECK ONE)

_X_ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Charles Rodes (jrl)

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $8,400
C. N/A
D. ROAP 26 AAP, Task 48

SI-SIE-79A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development of Spinning Screen Particulate Filter

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project:

Charles E. Rodes, Chemical Engineer
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A new concept involving a spinning cylindrical screen has been proposed which will hopefully serve as a particulate filter for gas sampling as well as a large particle classifier for particulate sampling. A prototype is to be built and tested under laboratory and field conditions to determine functional characteristics and capabilities.

Period of Performance: 12/1/72 - 6/30/73

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Charles Rodes (JEW)

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/30
B. $8,400
C. N/A
D. ROAP 26 AAP, Task 49

SI-SIE-78A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Development of Permeable Membrane Barrier Sample Extraction Interface

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Charles E. Rodes, Chemical Engineer
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A field prototype sampling interface system utilizing the permeable membrane separation concept, already tested in the laboratory, is to be built and tested. Various configurations are to be tested to determine the best design for a commercial prototype.

Project initiated 7/71; anticipated completion 12/73.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Charles Rodes (pm)

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $8,400
C. N/A
D. ROAP 26 AAP, Task 50

SI-SIE-78A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Obtain High Resolution Long-Path Infrared Absorption Spectra of Selected Gaseous Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. William F. Herget, Research Physicist
Roosevelt Rollins, Electrical Engineer
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this research effort is to obtain infrared spectra in absorption of a wide variety of gaseous pollutants as they are produced by stationary sources such as power plants, acid plants, oil refineries, etc. These data will be used principally to determine which spectral regions are most suited for measuring various pollutants, so as to minimize interferences from other species. The effects of atmospheric interferences will be studied. The instrumentation to be used in these studies consists of a 1800 degree Kelvin blackbody source which can be located up to two miles from the receiver section; two-foot diameter telescopic optics to collimate and collect infrared energy; and a monochromater, detector and associated signal processing equipment. The wavelength range covered is 2 to 14 microns, and the spectral resolution is on the order of one wave number.

Period of Performance: 3/73--6/75

METHOD OF SUPPORT (CHECK ONE)

_X_ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Dr. William Herget (JSR)

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____

A. 7/72-6/73
B. $8,400
C. N/A
D. ROAP 26 AAP, Task 51

SI-SIE-10A, REV 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Obtain Field Spectra in Emission of Gaseous Pollutants Emitted by Stationary Sources

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. William F. Herget, Research Physicist
Dr. Harold M. Barnes, Research Chemist
Roosevelt Rollins, Electrical Engineer
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:
Environmental Protection Agency, National Environmental Research Center, Research Triangle Park,
North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Four instruments will be used to obtain spectra and measure concentrations of gaseous pollutants emitted by stationary sources. They are: (1) a telespectral radiometer with 10 cm^{-1} resolution over the 3-14 micron spectral range for emission or double-ended absorption measurements over a one-mile path; (2) a telespectrophotometer with 1 cm^{-1} resolution over the 3-14 micron spectral range for emission over a two-mile path; (3) a four-wavelength infrared teleradiometer to measure SO_2 to CO_2 concentration ratios in smoke plumes; and (4) an ultraviolet-visible correlation spectrometer to measure NO_2 and SO_2 concentrations in plumes and in vertical planes.

Instruments (1) and (2), which are primarily for basic research, will be used to obtain infrared spectra in emission of a wide variety of gaseous pollutants as they are produced by stationary sources such as power plants, acid plants, oil refineries, etc. These data will be used principally to determine which spectral regions are most suited for measuring various pollutants, so as to minimize interferences from other species. Instruments (2) and (3) will be used to evaluate certain instrument design concepts and to obtain concentration data on specific pollutants.

Period of Performance: 7/72 - 6/73

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Dr. William Herget (BN)

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 7/72 - 6/73
B. $41,200
C. N/A
D. ROAP 26 AAP Task 52

SI-SIE-26A, REV 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Obtain High-resolution Laboratory Spectra of Selected Gaseous Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. M. Barnes, Jr., Research Chemist, Stationary Source Emission Measurements Sec., Source Emissions Measurement Methods Branch, Div. of Chemistry & Physics

Dr. W. F. Herget, Research Physicist; Stationary Source Emission Measurements Sec., Source Emissions Measurement Methods Branch, Div. of Chemistry & Physics

Mr. R. Rollins, Electronics Engineer, Stat. Source Emission Meas. Sec., Source Emissions Meas. Methods Br., Div. of Chem. & Physics

NAME AND ADDRESS OF INSTITUTION:
EPA, NERC, Div. of Chemistry & Physics, Source Emissions Measurement Methods Branch, Research Triangle Park, N. C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work is to obtain laboratory spectra of various pollutants when such data is not available in the published literature. One aspect of this effort will be to set up a tuneable laser diode system to obtain ultra-high resolution spectra and study the effects of pressure broadening.

Project initiated 7/1/72; anticipated completion date 6/30/73.

ETHOD OF SUPPORT (CHECK ONE)

xx INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Dr. H. M. Barnes (JBN)

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/1/72 to 6/30/73
B. $11,200
C. N/A
D. ROAP 26AAP Task 53

SI-SIE-28A; REV. 8-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Feasibility Study of the Use of Resonance Scattering for the Remote Detection of Pollutants in Stationary Source Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. William H. Gleen, Principal Scientist, Quantum Physics Laboratyr
Dr. Michael E. Mack, Principal Investigator
Dr. Michael C. Fowler, Principal Investigator
Dr. William F. Herget, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: Physics and Electromagnetics Laboratory, United Aircraft Research Laboratories, East Hartford, Connecticut 06108

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of the subject contract is to determine the feasibility of using resonance scattering from a tunable laser to remotely detect pollutants emitted by stationary sources. A particular goal of the study will be to determine which form of resonance scattering, such as fluorescence or resonance Raman, is most sensitive and specific for pollutant monitoring.

The contractor, as an independent institution and not as an agent of the government, will conduct an analytical and experimental evaluation of the various types of resonance scattering which could be used to measure the concentration of pollutants emitted by stationary sources such as a power plant smoke stack. The experimental evaluation will be confined to laboratory measurements. The contractor will use existing tunable laser source and detector systems. The principal pollutant gases of interest are NO and SO_2. Their concentrations in coal fired power plant effluents are typically 400 ± 150 and 1000 ± 500 ppm, respectively. It is assumed that the scattering area is close to the smoke stack exit, and that ranging is not necessary. The degree to which an absolute concentration measurement can be made will be evaluated. Potential interferences from quenching, scattered sunlight, and laser radiation scattered by other effluent constituents, such as N_2, CO, H_2O, CO_2, particles, etc. shall be examined both analytically and experimentally. As a result of the above studies, the contractor will recommend a program for field evaluation of the most suitable form of resonance scattering for stationary source pollutant monitoring.

Period of Performance: 6/30/72 - 6/29/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT 68-02-0656
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 6/72-6/73
B. $39,843
C. N/A
D. ROAP 26 AAP, Task N/A; FY 72 funded.

SI-SIE-78A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of Methodology for Measurement of Carbon Monoxide in Well Controlled Vehicles Including Cyclic Operation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. John E. Sigsby, Jr. Chief.
Mr. Francis N. Black, Research Chemist

Mobile Source Emission Measurement Section, Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, RTP, N.C.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Carbon monoxide levels mandated by the 1975-76 standards are below the level of sensitivity of present instruments. Prototype instruments now under contract development will be evaluated in the mobile source facility during the present year, and a new recommendation for an instrumental method will be made.

Project initiated **Dec, 72;** anticipated completion, **June, 75.**

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J. E. Sigsby, Jr. DLB

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 7/73
B. $11,200
C. N/A
D. ROAP 26ACV Task 03

SI-SIE-38A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:
Environmental Protection Agency

TITLE OF PROJECT:
Methodology for Determining Oxygenated Hydrocarbons from Mobile Sources

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. John E. Sigsby, Jr. Chief
Mr. Donald L. Klosterman, Chemist (Research)

Mobile Source Emission Measurement Section, Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:
Environmental Protection Agency, National Environmental Research Center, RTP, N.C.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Emission of oxygen containing compounds such as low molecular weight aldehydes and phenols in automobile exhaust has long been recognized as an important source of organic matter contributed by automobiles to the atmosphere. Unfortunately, attempts to develop instrumental methods of tests for such compounds in automobile exhaust have been unsuccessful to date and only cumbersome wet methods are available. New instruments are being developed and these will be tested by the mobile source group as they become available. Specifically new polargraphic aldehyde analyzers are to be tested against the wet methods with synthetically generated aldehyde mixtures and with automobile exhaust.

Project initiated February 1968; anticipated completion date June, 1977.

METHOD OF SUPPORT (CHECK ONE)
☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J. E. Sigsby, Jr. RLB

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $14,000
C. N/A
D. ROAP 26ACV Task 04

SI-SIE-76A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Methods for Analysis of Hydrocarbons in Mobile Source Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. John E. Sigsby, Jr., Chief
Mr. Francis M. Black, Research Chemist

Mobile Source Emission Measurement Section, Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, RTP, N.C.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Low levels of hydrocarbons expected in 1975-76 automobile exhaust present a problem for instruments and methods developed for higher present day levels. A comprehensive review and definition of hydrocarbon analysis and sample collection procedures is underway with a view toward defining interferences, linearity, and repeatability at the mandated exhaust concentrations.

Project initiated July 1972; anticipated completion date June 1976.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John E. Sigsby, Jr.

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $28,000
C. N/A
D. ROAP 26ACV Task 05

SI-SIE-10A, REV 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Methods for **Analysis** of N- and S-containing **Compounds**.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. John E. Sigsby, Chief
Mr. Donald L. Klosterman, Research Chemist

Mobile Source Emission Measurement Section, Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, RTP, N.C.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The exhaust of vehicles which burn heavy petroleum fractions as fuels may contain potentially hazardous compounds such as acridine and thiophene derivatives. An experimental program to evaluate N- and S- specific detectors for gas chromatography for the determination of such compounds in vehicle exhaust has been instituted. It is anticipated that such heavy organics will be sought in the exhaust of diesel and turbine powerplants.

Project initiated January, 1973, anticipated completion date December, 1974.

METHOD OF SUPPORT (CHECK ONE)
x INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John E. Sigsby, Jr. RLB

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $8,400
C. N/A
D. ROAP 26ACV Task 06

SI-SIE-1A, REV 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: *Environmental Protection Agency*

TITLE OF PROJECT: *Develop **Methodology to Specify** Atmospheric Reactivity of Emissions*

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. John E. Sigsby, Jr., Chief
Mr. Francis M. Black, Research Chemist
Mr. Donald L. Klosterman, Research Chemist

Mobile Source Emission Measurement Section, Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, RTP, N.C.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The photochemical reactivity of the organic matter present in mobile source emissions has been estimated in the past by total analysis of gaseous hydrocarbons and aldehydes by a combination of gas chromatography and colorimetric procedures. Mandated developments in control of automobile emissions is certain to cause some shifts in the relative amounts photochemically reactive and non-reactive components. New methods are being developed for the rapid estimation of the relative concentrations of light hydrocarbons by batch gas chromatographic procedures and substractive column procedures for the determination of olefins, paraffins, and aromatics are being updated in support of research and certification testing at OAWP facilities in Ann Arbor, Michigan.

Project initiated February, 1964; anticipated completion date June, 1977.

METHOD OF SUPPORT (CHECK ONE)

- x INTRAMURAL
- _ CONTRACT
- _ GRANT
- _ INTERAGENCY AGREEMENT
- _ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J. E. Sigsby, Jr. RLB

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________

A. 7/72 - 6/73
B. 14,000
C. N/A
D. ROAP 26ACV Task 09

SI-SIE-16A, REV 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Develop Methods for Analysis of "Unusual" Emissions from Current or Future Mobile Sources, i.e., Impact of Catalysts

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. John E. Sigsby, Jr., Chief, Supv. Res. Chemist
Mr. Donald L. Klosterman, Research Chemist
Dr. James O. Baugh, Research Chemist
Mobile Source Emission Measurements Section, Source Emissions Measurement Methods Branch, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:
Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Expected emission control developments may produce unexpected emissions of potentially hazardous substances. Thus, fixed beds of pelletized catalysts may by attrition add a new source of trace metal emissions to the atmosphere. Methods for the analysis of catalyst components are under development for use in research on this topic.

A combination of atomic absorption spectrophotometry and X-ray fluorescence spectrometry will be used on glass-fiber and membrane filter samples of exhaust particulate. It is anticipated that methods of test for a wide variety of catalyst metals and supports will be developed.

Project intitiated 11/72, anticipated completion date 6/74.

METHOD OF SUPPORT (CHECK ONE)
_x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John E. Sigsby

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 – 6/73
B. $16,000
C. N/A
D. ROAP 26ACV, Task 11

SI-SIE-70A, REV 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development of Sampling and Measurement Technology for Particulate Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. John E. Sigsby, Jr., Chief
Mr. William E. Karches, Electronic Engineer
Dr. James O. Baugh, Research Chemist
Dr. Ronald L. Bradow, Research Chemist
Mobile Source Emission Measurements Section, Source Emissions Measurement Methods Branch, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

With the institution of regulations limiting and eventually virtually eliminating the use of lead compounds in gasoline, emission of particulate matter from vehicles operated on lead-free fuel will be of prime concern. It appears that the primary particulate emissions from such a vehicle will be in the form of condensing heavy organic matter. A dilution tunnel sampler which will allow the organic matter sufficient residence time for condensation has been constructed and tested. A number of problems associated with the collection of particulate organics on glass fiber filters are presently under investigation. It appears that careful empirical standardization of filter media and test conditions will be required in order to obtain repeatable results.

A modified constant volume gas sampler-dilution tunnel will be tested in the new mobile source test facility in the near future. Presumably a composite procedure for both gases and particulates can be written.

Project initiated 7/72; anticipated completion date 6/73.

ETHOD OF SUPPORT (CHECK ONE)
☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John E Sigsby

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $47,600
C. N/A
D. ROAP 26ACV Task 13

SI-SIE-10A, REV 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Method for the Analysis of Higher Molecular Weight Materials

Give names, departments and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. John E. Sigsby, Jr., Project Officer, Mobile Source Emission Measurements Section, Source Emissions Measurement Methods Branch, Division of Chemistry and Physics
Dr. Ronald L. Bradow, Research Chemist, Mobile Source Emission Measurements Section

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There are a number of problems associated with emission of heavy organic substances from mobile sources including condensation to form particulate matter, emission of polynuclear aromatic hydrocarbons, and of fuel additive residues. Research into the significance of these matters depends on the availability of methods for the collection and analysis of higher molecular weight organics in exhaust.

Filter and solid-state absorber samples of high molecular weight organics are being investigated by GC-MS, NMR, and IR spectrometry. In addition various chromatographic methods are being used to rough-cut the complex mixtures observed for more detailed consideration.

Project initiated 4/72   Anticipated Completion Date 12/76

METHOD OF SUPPORT (CHECK ONE)
xx INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John E. Sigsby Jr.

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $16,800
C. N/A
D. ROAP 26ACV Task 15

SI-SIE-10A, REV 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Install, Operate, Maintain Source Facility

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. John E. Sigsby, Jr., Project Officer, Mobile Source Emission Measurements Section, Source Emissions Measurement Methods Branch, Div. of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: EPA, National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

With the relocation of the mobile source section from Cincinnati-NERC to RTP, a new mobile source test facility must be constructed. A chassis dynamometer facility will be installed in the near future together with instrumentation for certification procedures, a CVS gas sampler and a dilution tunnel. The facility will be operated to provide gas and particulate samples for the Mobile Source Section.

Project initiated: 7/72 Anticipated Completion date 6/73.

METHOD OF SUPPORT (CHECK ONE)

xx INTRAMURAL

_ CONTRACT

_ GRANT

_ INTERAGENCY AGREEMENT

_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J. E. Sigsby, Jr. RLB

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $47,600
C. N/A
D. ROAP 26ACV Task 16

SI-SIE-7BA; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development of a Portable Particulate Diluter-Sampler for Miscellaneous Mobile Sources

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. M. Tomaides, Program Manager
Dr. C. Peterson, Senior Engineer
Dr. Jack Wagman, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Environmental Research Corporation, 3725 N. Dunlap St., St. Paul, Minnesota 55112

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Project consists of the design, development, fabrication, and testing of a diluter-sampler for use in the field in sampling airborne particulate matter from miscellaneous mobile sources. Operational parameters include a total diluted flow rate of 50 scfm, a range of exhaust gas flow rate of 1-5 cfm at temperatures between 200°F to 1000°F, sampling rates of 1 and 5 cfm, use of absolute filter for clean-up of dilution air, and operation on 12 VDC battery pack.

Period of Performance: 6/28/72 - 3/27/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
x CONTRACT* 68-02-0589
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______________________

A. 6/72 to 4/73
B. $47,875
C. N. A.
D. ROAP 26ACV, Task 18

SI-SIE-7BA; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Design, Develop, Fabricate and Test a Device Compatible with the Constant Volume Sampling System

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. R. D. Gafford, Technical Manager, Environmental Systems Dept.
Mr. F. W. Hartman, Jr., Project Engineer, " " "
Mr. H. D. Chen, Mechanical Engineer, " " "
Mr. R. D. Carlson, Systems Test Engineer, " " "
Dr. Jack Wagman, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: Northrop Corporation, Electro-Mechanical Division
500 East Orangethorpe Avenue, Anaheim, California 92801

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this effort is to design, develop and test a device, which can be used with the Constant Volume Sampling (CVS) System, for the simultaneous measurement of gaseous and particulate mass emissions from light-duty motor vehicles. A particle is defined as any material other than unbound water that emanates from the exhaust and exists as a solid or liquid at 90°F.

This device, with detailed specifications, drawings, test data and technical manuals is to be delivered by the contractor to the Environmental Protection Agency.

The contract starting date is June 24, 1972. Phase I, consisting of a design study, system design and an interim report, is to be completed by December 29, 1972.

Fabrication and testing of the device, the Phase II activity, is to be completed by May 11, 1973. Phase III, the delivery, installation and checkout of the device at the designated EPA facility is to be completed by June 15, 1973.

Period of Performance: 6/24/72 - 6/23/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
x CONTRACT 68-02-0573
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 6/72 to 6/73
B. $75,731
C. N.A.
D. ROAP 26ACV, Task 20

SI-SIE-10A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Apply Electron Optical Techniques to Particulate Measurement and Characterization

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. John E. Sigsby, Jr., Chief, Mobile Source Emission Measurements Section
Mr. John Miller, Research Chemist, Engineering Support and Sampling Studies Section
Source Emissions Measurement Methods Branch, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Both scanning and transmission mode electron microscopy in combination with energy dispersive x-ray elemental analysis are highly useful in characterization of single particles. These techniques will be applied to particulate studies as necessary.

Project Initiated 7/72, anticipated completion date 6/73

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John E Sigsby

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B $14,000
C. N/A
D. ROAP 26ACV, Task 21

[illegible] REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Chemical and Physical Characterization of Automotive Exhaust Particulate Matter in the Atmosphere

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. John F. Foster, Sr. Project Leader, Environmental & Materials Characterization Div.
Mr. C. W. Milton, Sr. Chemist, Environ. & Materials Characterization Div.
Mr. D. A. Troyser, Sr. Mechanical Engineer, Thermal Systems Divsion
Dr. R. I. Mitchell, Sr. Scientist, Biomedical Sciences and Technology Division
Mr. W. E. Schwartz, Research Chemist, Organic Chemistry Division
Dr. Jack Wagman, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Battelle Memorial Institute, 505 King Avenue, Columbus, Ohio 43201

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of the program is to determine the physical and chemical characteristics of exhaust particulate matter from internal-combustion engines as a function of sampling procedure, engine operating conditions including emission control systems, fuel composition, and residence time in the atmosphere. Emphasis is being placed on the study of particulate matter during its lifetime in the atmosphere.

The scope of the project work covers the generation of automobile particulates from leaded and nonleaded fuels in two identical automobiles with specially chosen, measured engines which have been selected for similarity. The diluted auto exhaust, after passing through the dilution tunnel, passes into a residence chamber large enough to minimize wall losses. The fate of auto exhaust particles will be studied from their initial formation to their ultimate removal from the atmosphere.

Period of Performance 5/31/72 - 5/30/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
x CONTRACT No. 68-02-0279
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 5/72 - 5/73
B. $149,931
C. EPA: $49,977; Coordinating Research Council: $99,954
D. ROAP 26ACV Task 34

SI-SIE-70A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Experimental Support for EPA Participation in the California Aerosol Characterization Study

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. C.S. Burton, Project Director

Dr. William E. Wilson, Project Officer, Atmospheric Aerosol Research Section, Atmospheric Chemistry and Physics Branch, Division of Chemistry and Physics, EPA.

NAME AND ADDRESS OF INSTITUTION:
North American Rockwell, P.O. Box 1085, 1049 Camino Dos Rios, Thousand Oaks, Calif. 91360

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Contractor shall perform experiments, collect and analyze samples, and provide field support for the Environmental Protection Agency's participation in the California Aerosol Characterization Study. The Aerosol Study will involve sampling and monitoring at three fixed sites (Pasadena, Riverside, and San Jose, California) and at various locations through use of a mobile facility.

Period of Performance 8/1/72 - 4/30/73

METHOD OF SUPPORT (CHECK ONE)
☐ INTRAMURAL
☒ CONTRACT 68-02-0583
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72 - 6/73
B. $61,000
C. N/A
D. ROAP 21AKB, Task N/A FY 72 Funded

SI-SIE-70A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Optimum Production of Atmoic Oxygen for Use in Analytical Technology

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Dale J. Milnes , Project Director

Mr. John E. Sigsby, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:
Ozone Research and Equipment Corporation, Phoenix, Arizona 85019

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Substances that are known by our prior experience to cause the decomposition of ozone and substances that a literature survey indicates cause the decomposition of ozone shall be subjected to ozone gas streams in a linear analytical set up and measurements conducted to discover the generation and yield of atomic oxygen. Temperature, gas stream velocity, ozone concentration, and other influencing factors will be varied to establish optimum yield parameters.

A study shall be performed to determine the feasibility of generating atomic oxygen from the decomposition of ozone under as mild conditions as possible, that is, as near ambient temperature and pressure as possible. Such a study shall include a copy of possible catalysts and their operating parameters.

The widest possible range of materials known to cause the decomposition of ozone shall be investigated.

Period of Performance 6/9/72 - 9/8/72

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
x CONTRACT No. 68-02-0558
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 6/72 - 9/72
B. $13,228
C. N/A
D. ROAP 26ACV Task N/A FY 72 Funded

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801175

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT
Generation and Decay of Small Ions

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Kenneth T. Whitby,	389-22-7931	- Professor, Department of Mech. Engr.
Milos Tomaides,	475-62-7362	- Assist. Prof. of Mechanical Engineering
Benjamin Y. H. Liu,	310-38-8238	- Professor of Mechanical Engineering

NAME AND ADDRESS OF APPLICANT ORGANIZATION
University of Minnesota
Institute of Technology
Department of Mechanical Engineering, Minneapolis, Minnesota 55455

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

Major research objectives will be as follows:

1. To apply the Minnesota Aerosol Analyzing System (MAAS) developed during the previous six years of this grant to the study of aerosols smaller than one micron. Two specific studies will be: (a) The coagulation of mixtures of several sizes of monodisperse aerosols under conditions that will attempt to simulate what is happening in the atmosphere, and (b) The preliminary measurement of the size distributions and concentration of combustion aerosols.

   As part of these studies, it is also planned to carry out theoretical studies of the coagulation and mixing of aerosols under conditions that simulate what may be occurring in the urban atmosphere on a microscope.

2. To design and construct a compact field portable version of the electrical mobility analyzer. As soon as it is operational it will be used in exploratory field studies especially around sources of submicron aerosols.

3. To continue studies of (a) Aerosol generation, (b) Aerosol measurement, and (c) Electric Aerosol charging of aerosols smaller than 0.01 micron diameter. These studies are a necessary foundation for the studies mentioned in 1.

LEAVE BLANK DO NOT WRITE BELOW THIS LINE

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 5-1-70 4-30-74
BUDGET PERIOD 5-1-72 4-30-73
ANNUAL EFFORT $38,750
MULTIPLE FUNDING —
I.D. NUMBER 26AEK-5

SI-SIE-7aA; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Develop Beta Gauge

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Thomas Dzubay, Research Physicist,
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A beta gauge for determining total particulate loading in ambient air will be developed and evaluated. In the first year particulates deposited on a circular filter will be tested. In the next year a filter tape collector will be used. A Geiger Counter will be used to detect ^{14}C radiation, and the count rate change will be correlated with the mass loading. The work will begin in December 1972 and will continue until June 1975.

METHOD OF SUPPORT (CHECK ONE)

_x_ INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas G Dzubay

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A 7/72-6/73
B $8,000
C N/A
D ROAP ID 26 AEK: Task 07

SI-SIE-7bA; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Develop Emission Discharge Detectors to Monitor Hg, Pb, Cd, Se and As.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Carole Sawicki, Res. Chemist,
Kenneth Krost, Res. Chemist,
Field Methods Development Section (Instrument Development Unit)
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project involves the development of a spark discharge detection system for the elements lead, mercury, arsenic, selenium and cadmium. Research and development will include studies designed to delineate precisely the following parameters:

(1) Detection sensitivity
(2) Detection specificity
(3) Potential application of the system to pollution monitoring.

The work began in May 1972 and will continue until approximately August 1974.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Carole Sawicki

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A 7/72-6/73
B $28,000
C N/A
D ROAP ID: 26AEK: Task 08

SI-SIE-75A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Evaluate X-Ray Fluorescent Analyzer as Potential Field Instrument for Toxic Elements

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. K. Stevens, Supervisory Chemist
T. G. Dzubay, Res. Physicist
H. Rook, Res. Chemist
C. Sawicki, Res. Chemist,

Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

An energy dispersive X-ray fluorescent analyzer is being fabricated for the EPA by the Lawrence Berkeley Laboratory. Upon delivery in January, 1973, it will be tested with NBS orchard leaves dispersed onto a filter and tested with neutron activation. Its ability to automatically batch samples collected in the field will be tested. The work will span the January 1972 to June 1977 period.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas G. Dzubay

PROFESSIONAL SCHOOL (medical, grad. [illegible] etc.)

A 7/72-6/73
B FY 73 Funds $14,000
C N/A
D ROAP ID: 26AEK: Task 11

SI-SIE-78 A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800771

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

THE DIRECT AND CONTINUOUS DETERMINATION OF METALS IN AIR

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

James W. Robinson, 434-56-4207, Professor of Chemistry, Department of Chemistry

Unknown, Postdoctoral Fellow, Department of Chemistry

Unknown, Graduate Students(2), Department of Chemistry

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Louisiana State University
Baton Rouge, Louisiana 70803

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

We are currently engaged in research work designed to develop an analytical procedure for the direct and continuous determination of metals in air (AP 00866).

Based on the data we have obtained we wish to initiate three subsidary programs, each closely related and pertinent to our original program, and to air pollution control in general. They include:

1. Develop a calibration procedure for our present AA instrument capable of being used at the concentration levels of pollutants present in the air, i.e. at least down to 10^{-10} g. The technique we intend to develop is based on the use of activation analysis.
2. Develop a method for the direct determination of metals in particulates. This would be achieved by measuring the total concentration of a particular pollutant, such as Pb, Hg, Cd, etc., in the air using our AA equipment. Then by adding suitable filters,* the particulates can be removed from the air. The subsequent metal analysis provides the concentration of the remaining pollutant. The difference in the concentration of the particulate removed by filtering.
3. Development of a field sampling device. Our present equipment is not easily portable. It is proposed to take carbon rods (1) clean them on the sampling site, (2) expose them to the air for a specific period during which time molecular pollutants are absorbed, and (3) return the exposed rods to the base lab and analyze using a technique similar to the AA technique being developed.

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* "Filters" may include various types of precipitators. Simple filter devices are subject to interference from electrostatic build up and may not be reliable in removing particles of particular dimensions.

LEAVE BLANK DO NOT WRITE BELOW THIS LINE

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 4-1-70 5-31-73
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $38,105
MULTIPLE FUNDING —
I.D. NUMBER 26 AEK-12

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Analysis for Beryllium in the Ambient Air

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Eva Wittgenstein, Research Chemist
Howard W. Swofford, Physical Science Aid
Laboratory Measurements Research Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

An improved method for the rapid and accurate analysis of air filter samples for beryllium is badly needed for monitoring and checking sources against the new emission standards recently set for beryllium. One of the emission standards is based on a 30-minute emission period which means a short sampling period producing small samples requiring a highly sensitive method for analysis.

One of the techniques being investigated is a rapid dissolution scheme followed by selective solvent extraction for beryllium then analysis of the resulting liquid sample by atomic absorption.

Alternatively a more direct method of measuring beryllium on the filter without any separation steps from the matrix and without regard for the chemical form of the beryllium would be preferred. There are two possible means of accomplishing this task. One is simply to ignite the filter sample at a temperature high enough to liberate elemental beryllium from the sample and measure it by its atomic absorption. This could be tried with the new graphite heating tubes recently introduced as accessories for atomic absorption work with reported very good sensitivities for many elements. The other non-flame method for analysis of beryllium is that of photo-activation. The basis of this procedure is the nuclear reaction in which gamma-rays above a certain energy can cause emission of a weakly bound neutron from the Be^9 nucleus. This reaction is unique in nature in that it can occur at quite low gamma-ray energies with hardly no interferences. A feasibility study is being conducted to determine if use can be made of this analytical approach used by industry to apply to low concentration air filter samples.

THOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

Project initiated October, 1972; anticipated completion date September, 1973

SIGNATURE OF PRINCIPAL INVESTIGATOR Eva Wittgenstein

PROFESSIONAL SCHOOL (medical, graduate, etc.) LMRS, AQMMB, DCP, NERC, EPA

a. 7/72-6/73
b. $6,000
c. N/A
d. 26AEK - 13

SI-SIE 1A REV. 8-64

NOTICE OF R
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Instrumenation or Methods in the Rapid and Accurate Measurement of Nitrate and Sulfate in Atmospheric Particulates

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. John Driscoll
Eva Wittgenstein, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Walden Research Corp. 359 Allston Street, Cambridge, Mass 02139

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this contract is to develop inexpensive, rapid and accurate analytical procedures for the determination of the total nitrate and sulfate ion content of collected atmospheric particulate samples. Sulfate and nitrate in atmospheric particulate matter are important constituents since these species represent about 12 and 3% by weight of the total suspended matter in ambient air. The nitrate ion is a known precarcinogen and environmental toxicant. As end products of oxidations involving atmospheric NO_x and SO_2 they are important indicators of environmental pollution.

Period of Performance 6/29/72 - 6/28/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

x CONTRACT No. 68-02-0564

~~__ GRANT~~

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 6/72 - 6/73
B. $25,000
C. N/A
D. ROAP 26AEK Task 15

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Evaluation of H_2SO_4 and $SO_4^=$ Instrumentation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. K. Stevens, Supervisory Chemist,
T. G. Dzubay, Res. Physicist,
C. Sawicki, Res. Chemist,
Field Methods Development Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Instrumentation for measuring sulfuric acid and sulfate in aerosol will be tested in the lab and in the field. A chemiluminescent technique and a flame photometric technique for acid mist will be tested. Total sulfur will be tested by X-ray fluorescence. The ESCA technique will be considered if it is shown that a total S measurement is not indicative of total sulfate. The work was begun on July 1, 1973 and will continue to July 1977.

METHOD OF SUPPORT (CHECK ONE)

_X_ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas G Dzubay

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A 7/72-6/73
B $8,000
C N/A
D ROAP ID: 26 AEK 19

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800884

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Gulf South Research Institute
8000 GSRI Avenue
Baton Rouge, La. 70808

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

1. H. P. Burchfield, Ph.D. 156-05-8010 Analytical Chemist Department of Biochemistry	2. Ralph J. Wheeler, B.S. 467-36-3548 Analytical Chemist Department of Biochemistry	3. Jerome Bernos, B.S. 435-62-7880 Analytical Chemist Dept. of Biochemistry

TITLE OF PROJECT

GLC Detector for Carcinogenic Hydrocarbons

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

During previous work on this project a liquid-phase fluorescence detector was constructed for the selective measurement of carcinogenic and non-carcinogenic polynuclear arenes by gas chromatography. It proved practical to resolve mixtures of compounds which were not separable on the chromatographic column. Following this, a gas phase fluorescence detector was developed and applied to the analysis of these compounds. It is superior in all respects to the liquid system except for sensitivity. Future work on this project will be directed toward improving sensitivity of the gas phase system by use of an ellipsoidal condensing mirror, and removing the carrier gas with a molecular separator before the compounds enter the detector. The emission and excitation monochromators of the spectrophotofluorometer will then be equipped with servo-mechanism drives so that wavelengths will be adjusted automatically to optimum values before the elution of each chromatographic peak. The complete apparatus will then be evaluated for the analysis of polynuclear arenes in samples of air collected in heavily industralized areas.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 5-1-72 4-30-75
BUDGET PERIOD 5-1-72 4-30-73
ANNUAL EFFORT $19,314
MULTIPLE FUNDING —
I.D. NUMBER 26AEK-20

287

SI-SIE-7BA; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 900985

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

American Health Foundation
2 East End Avenue, New York, N.Y. 10021

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Dietrich Hoffmann, Ph.D., Chief, Div. Environmental Toxicology
Jiri Vais, Ph.D., Res. Fellow, Div. Environmental Toxicology
Gunter Rathkamp, B.S., Head, Analytical Section, Div. Environmental Toxicology

TITLE OF PROJECT

PROFILE ANALYSIS OF POLYNUCLEAR AROMATIC HYDROCARBONS IN URBAN AIR

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Urban air contains traces of carcinogenic polynuclear aromatic hydrocarbons (PAH). However, since non-active PAH modify the activity of carcinogenic PAH, quantitative data for some selected PAH are only of limited value for the bioassay of urban pollutants. It is the purpose of this research project to develop a method for the profile analysis of PAH in polluted air.

The organic matter of pollutants will be distributed between solvents and the resulting PAH concentrate will be chromatographed. The column fractions will be analyzed under standard conditions by gas chromatography (electron capture and flame ionization detectors) and by high-speed liquid chromatography. The maxima in the chromatograms will be identified by ultraviolet absorption and mass spectra. This step requires the establishment of a reference bank (impurities<0.1%).

For the quantitative analysis we will employ as internal standards ^{14}C-labeled benz(a)anthracene (BaA), benzo(a)pyrene (BaP), and dibenzo(a,j -pyrene (DBP). The PAH profile will be based on the analysis of the consecutive fractions with BaA, pre-BaP, BaP, post-BaP and DBP.

After establishing a method for the profile analysis of PAH, we plan, in a future study, to assay pollutants for tumor initiating activity on mouse skin and to correlate these findings with data from the profile analysis. The method should also be of value for the carcinogenic bioassay of other inhalants as well as different environmental agents.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 5-1-72 4-30-74
BUDGET PERIOD 5-1-72 4-30-73
ANNUAL EFFORT $38,735
MULTIPLE FUNDING —
I.D. NUMBER 26AEK-21

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Calibration of Sizing Instrumentation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

T. Dzubay, Res. Physicist,
Field Methods Development Section (Instrument Evaluation Unit)
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Techniques will be developed for calibration of optical sizing and aerodynamic sizing instruments. This will include evaluation and use of a vibrating orafice aerosol generator. An effort will be made to obtain calibrated aerosol for the difficult range from 0.1 to 1 μm in addition to larger particles. Various types of sizing instruments will be tested. The work will span the late 1973 to 1977 period.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas G. Dzubay

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A 7/72-6/73
B $6,000
C N/A
D ROAP ID: 26 AEK Task 24

SI-SIE-72A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801301

SUPPORTING AGENCY. Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Minnesota, Minneapolis, Minnesota 55455

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Benjamin Y.H. Liu, 310-38-8238, Professor, Mechanical Engineering Department

TITLE OF PROJECT

Development of Basic Aerosol Standards

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The objective of this research is to develop a "basic aerosol standard" for instrument calibration and other experimental purposes. Techniques suitable for the production of the standard within the size range from 0.1 to 100 µm will be investigated and studied. It is proposed that the following criteria be used for defining the monodisperse aerosols used as basic standards:

(a) Standard deviation of the aerosol shall be on the order of 1% of the mean particle size, i.e. the geometrical standard deviation of the aerosol shall be on the order of 1.01.

(b) Mean particle size and concentration shall be known to accuracies of better than 1%.

The overall objectives of this research include developing the basic aerosol standard and applying the standard thus developed to the study of the characteristics of various aerosol measuring and sampling instruments including the response characteristics of single particle optical counters as a function of particle size and refractive index.

The monodisperse aerosols used as basic standards will be generated by dissolving a non-volatile material in a volatile solvent and atomizing the solution with the vibrating-orifice droplet generator to produce droplets of a uniform size. The vibrating-orifice droplet generator will make use of small orifices ranging in size from 2 to 100 µm and piezoelectric transducers of various thicknesses to produce the needed vibration for uniform droplet production. The particle size distribution and the concentration of the aerosols will be measured by electron microscopy, by the Millikan cell method, the two-pressure electrical mobility method, the fluorometric and other methods available in our laboratory.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-1-71 5-31-73
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $34,500
MULTIPLE FUNDING —
I.D. NUMBER 26AEK-25

SI-SIE-38A, REV 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Laboratory Analysis of Non-Metallic Elements in Particulates

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

James D. Mulik, Research Chemist
Laboratory Measurements Research Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The analysis of airborne particulate for non-metallic elements such as total carbon, organic carbon, carbonate carbon, nitrogen, sulfur, phosphorous, chlorine, hydrogen, nitrate and sulfate would be of great value in characterizing airborne particulate. Samples have been obtained from eight cities through the National Air Sampling Network. The samples will be analyzed by the Galbraith Micro Analytical Laboratory in Knoxville, Tennessee.

Project initiated December 1972; anticipated completion date; December, 1973

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR James D Mulik

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A.
B. $6,000
C. N/A
D. ROAP 26 AEK, Task 30

SI-SIE-?8A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Antigen E and Other Allergens- Chemical and Physical Properties

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Eva Wittgenstein, Research Chemist
Marvin Guyer, Biological Laboratory Technician
Howard W. Swofford, Physical Science Aid
Laboratory Measurements Research Section, Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Ragweed pollen and its principal allergenic constituent, Antigen E, are among the major causes of airborne hayfever and bronchial asthma to which some 30 million Americans are susceptible. Analytical methods for its assay are not available nor are any methods available for the analysis of other atmospheric biological material.

The present task involves chemical and physico-chemical studies of Antigen E, 2 minor ragweed pollen antigens, antigens isolated from various other pollen species, fungi, smuts, house dust and particles collected on high volume filters with special emphasis on proteins and glycoproteins.

Various extraction methods are used comparing the efficiency of extraction by prolonged stirring, ultrasonic disintegration and high frequency shear and shock action. Efficiency is checked by measuring absorbance of extracted material at 260 and 348 nm wavelength in a spectrophotometer.

A major portion of the task involves separation and isolation of fractions and sub-fractions from the antigens in a pure form using precipitation methods, liquid-liquid chromatography, analytical and preparative acrylamide gel electrophoresis and isoelectric focusing.

Analysis of the isolated material will include molecular weight determination by ultracentrifugation, elemental analysis, hydrolysis, dansylation, amino acid and carbohydrate studies using chromatographic methods, spectrophotometry, fluorimetry and other means necessary to determine structure and chemical properties. The resulting data will then be used as a basis to develop sensitive analytical micromethods which can be employed for identification of environmental pollen constituents and aeroallergens.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Eva W. Wittgenstein

PROFESSIONAL SCHOOL (medical, graduate, etc.) LMRS, AQMMB, DCP, NERC, EPA

a. 7/72-6/73
b. $41,000
c. N/A
d. 26AEK- Task 31

Project initiated April, 1969; anticipated completion date, June, 1973

SI-SIE-78A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Chromatographic Studies of Polynuclear Organic Matter (POM)
A. High Pressure Liquid Chromatography Studies

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Catherine Golden, Research Chemist
Laboratory Measurements Research Section
Air Quality Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

With the help of ultrasonic treatment and liquid chromatographic examination a better method for extraction of polynuclear organic matter and other components of airborne particulates is being completed. The liquid chromatographic technique is also being applied to the analysis of various types of particulates for polynuclear organic matter.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Catherine Golden

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $6,000
C. N/A
D. ROAP 26 AEK, Task 35

SI-SIE-34A, REV 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: *Environmental Protection Agency*

TITLE OF PROJECT:

Instrumentation and Methodology for Assay of Individual Polynuclear Aromatic Hydrocarbons

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. R. A. Brown, Project Director, Esso Research and Engineering Company

Mr. James Mulik, Project Officer, Division of Chemistry & Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Analytical and Information Division
Esso Research and Engineering Company, Linden, New Jersey 07036

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is well known that the major source of polynuclear aromatic hydrocarbons is from the incomplete combustion of organic substances such as coal, petroleum and refuse. The rapid growth of population and the subsequent greater use of combustion processes has greatly increased the atmospheric load of polynuclear aromatic hydrocarbon. The assay of individual polynuclear aromatic hydrocarbons is of considerable importance because many of these compounds are believed to be carcinogenic to man. A rapid and reliable method for the assay of as many individual polynuclear aromatic hydrocarbons as possible would simplify investigations of cancer researchers. Various techniques have been used to assay polynuclear aroma hydrocarbons found in ambient air particulates. They generally involve soxhlet extraction of the particulate, followed by preliminary column chromographic clean up of the soxlet extract prior to analysis by thin layer chromatography, liquid-solid and gas liquid chromatographic techniques employing a wide range of detectors.

It is the purpose of this contract to develop instrumentation and methodology for the analysis of several polynuclear aromatic hydrocarbons not only in particulate matter but anywhere else they may be found in the environment.

Period of performance: 8/28/72 - 8/27/73

METHOD OF SUPPORT (CHECK ONE)

_ INTRAMURAL
X CONTRACT 68-02-0653
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

A. 7/72 - 6/73
B. $55,000
C. N/A
D. ROAP 26 AEK, Task 36

SI-SIE-19A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Isolation of Hayfever Antigens from Short Ragweed Pollen

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. R.M. Flora, Director of Research Product Development
Robert Chojnacki, Head, Chromatography Department
Edmund Bassett - Vice President of Operations
John Tuttle - Head, Quality Control Laboratories
Eva Wittgenstein, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Worthington Biochemical Corporation, Freehold, New Jersey 07728

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This contract involves the isolation of pure Antigen E, Antigen K and Antigen Ra3 from short ragweed pollen.

Atmospheric allergens not only cause hayfever and bronchial asthma in millions of Americans every year, they also play a role in flu epidemics, and with SO_2, ozone, etc. influence allergic symptoms. The assay of environmental allergens therefore becomes increasingly important. A thorough investigation of the chemical structure and physical properties of allergens, co-allergens, pre-allergens, enhancers, etc. will result in the development of sensitive and dependable analytical micro methods to be used in epidemiological studies and ultimately in an understanding and control of hayfever and asthma.

An important and very potent aeroallergen is antigen E, a protein constituent of ragweed pollen. From the viewpoint of the necessity of a thorough understanding of the role of the aeroallergens and their cofactors and prefactors in hayfever and asthma, studies of the chemical composition and physico-chemical properties of pure Antigen E extracted from short ragweed pollen are to be pursued. In addition, the pure antigen serves as reference standard material so that the developed analytical methods can be properly standardized for their application to analytical methodology and epidemiological studies. This is a beginning study to determine the type and quantity of allergens, cofactors and preallergens present in the air in the belief that knowledge of their relative amounts could initiate proper controls of the hayfever and asthma problem.

Period of Performance: 6/27/72 - 3/26/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT 68-02-0566
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ______

A. 6/72 - 3/73
B. $41,000
C. N/A
D. ROAP 26 AEK, Task N/A; FY 72 funded.

SI-SIE-28A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Forward - Scattering Particle Sizing Instrument

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. James McNesby, Project Manager
W. Kirchoff, Deputy Manager
Dr. C.C. Gravatt, Scientific Consultant
Dr. Thomas Dzubay, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: U.S. Department of Commerce, National Bureau of Standards, Washington, D.C. 20234

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Design, fabricate, and test an instrument for particle sizing of particulates suspended in air by means of scattered light. The device will operate in the field for aerosol characterization studies. It will determine size for particles in the 0.1 to 4 µm diameter range.

It is likely that the instrument will also succeed in determining shape and index of refraction for the particles. This is to be done for single particles, and after an appropriate sample period, the appropriate number, area, and volume distribution are to be printed out.

Period of Performance: 6/27/72 - 6/26/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
__ GRANT
X INTERAGENCY AGREEMENT EPA-1AG-0178(D)
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 6/72 - 6/73
B. $40,000
C. N/A
D. ROAP 26 AEK Task N/A; FY 72 funded.

SI-SIE-76 A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Design, Fabricate and Demonstrate an Instrument for Assaying Benzo(a) Pyrene

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. H. P. Burchfield, Analytical Organic Chemist, Technical Dir. of Atchafalaya Basin Labs.
Mr. R. J. Wheeler, Analytical Chemist, Department of Biochemistry
Mr. S. M. Billedeau, Chemist, Dept. of Biochemistry
James D. Mulik, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:
Gulf South Research Institute, 8000 GSI Avenue, Baton Rouge, La.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The contractor will design, fabricate and demonstrate a system for the direct assay of benzo(a) pyrene in ambient air particulate matter. The prototype system shall be able to detect benzo(a) pyrene at concentrations less than 5 nanograms per milligram of particulate or 0.1 microgram per thousand cubic meters of air. The system will resolve benzo(a) pyrene from benzo(e) pyrene, benzo(k) fluoranthene, benzo(g.h.i.) perylene, perylene, aliphatic hydrocarbons and any other compounds that may interfere. The maximum amount of benzo(a) pyrene in air borne particulates will usually be less than 100 micrograms per 1000 cubic meters. The contractor will devise some method to assure the reliability and reproducibility of operation over long time intervals and provide a method whereby the accuracy and precision of the system may be readily determined.

Period of Performance 6/29/72 - 6/28/73

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
_x CONTRACT No. 68-02-0550
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 6/72 -
B. $54,075
C. N/A
D. ROAP 26AEK Task N/A; FY 72 funded.

SI-SIE-7A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. AP 367

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Indiana University Foundation, Box "F"
Bloomington, Indiana 47401

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Frank T. Gucker, 218-32-4652, Research Professor Emeritus of Chemistry, Department of Chemistry
Horng-Min Lin, 382-54-6103, Research Associate, Department of Chemistry
Chao-Ming Huang, 509-48-8427, Research Associate, Department of Chemistry
Jiří Tůma, 315-58-4349, Research Associate, Department of Chemistry
(We hope to arrange for another exchange visit during 1973-4).

TITLE OF PROJECT

Physical Chemistry of Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

We aim to determine light-scattering diagrams from single aerosol particles in milliseconds, while a dilute aerosol stream traverses an intense laser beam. The theory of the new single-particle photometer has been worked out, and we are testing a prototype in which the scattering diagram is swept out by a rotating mechanical aperture. Another type of instrument is nearly complete, in which an electric scan will sweep out the diagram on an Image Orthicon TV camera tube. In both cases, results may be displayed as oscillographic photographs, and the instruments also may be interfaced with a computer to digitize and record the diagrams.

Comparison of experimental diagrams with those calculated from Mie's theory of light scattering will allow direct determination of the size of isotropic spherical particles of known refractive index. This is immediately applicable to laboratory use in studying the aging of aerosol clouds. Theoretical and experimental tests also will be made to determine the possibility of using these instruments to find both the particle size and the refractive index over a range useful for air-pollution studies. This may extend the usefulness of the instruments to field work, where computer interfacing will be particularly advantageous.

Study of Mie's scattering theory has yielded new expressions for the intensity functions in terms of trigonometric series which are better suited for analytical treatment than the classical Mie series.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 10-1-71 9/30/73
BUDGET PERIOD 10-1-71 9/30/73
ANNUAL EFFORT $46,050
MULTIPLE FUNDING
I.D. NUMBER 26 AEK (No task assigned; FY 72 funded)

SI-SIE-15A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801256

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Florida, Gainesville, Florida 32601

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

David T. Williams 271-31-4351
Professor, Department of Aerospace Engineering

TITLE OF PROJECT

Field applications of multi-component d^2 spectrometer

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The second derivative spectrometer as developed under HEW sponsorship will be field tested in Jacksonville, Florida, in continuous real-time recording of 4 or more pollutants including NO, O_3, NO_2, SO_2, to concentrations of .1 ppm to .001 ppm or less. Changes in pollutant concentration will be correlated with wind direction, temperature, humidity, and other variables in order to identify and analyze chemical reactions of air pollutants with each other and the atmosphere. Supplementary laboratory investigations will be carried out in Gainesville. The optimum role of the d^2 spectrometer, whether in automated recording, or in preliminary surveys of air pollution, will be analyzed.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-1-71 8-31-72
BUDGET PERIOD 6-1-71 8-31-72
ANNUAL EFFORT $7,500
MULTIPLE FUNDING
I.D. NUMBER 26 AEK (No task assigned; FY 72 funded)

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800864

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Vermont, Burlington, Vermont 05401

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

(PI) Dr. Robert W. Detenbeck (087-26-7223), Professor, Dept. of Physics
Mr. Eugene P. Mosca (052-34-7907), Graduate Research Assistant, Dept. of Physics and NSF Faculty Fellow from St. Michael's College, studying at the University of Vermont in Physics

TITLE OF PROJECT

Automated Microparticle Shape Discrimination

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

At present suspensions of microscopic and submicroscopic particles are sorted and counted by sizes using automated light-scattering techniques. The proposed research will extend the use of light-scattering measurements to sorting by particle shape.

At low particle densities, where present instruments count or sort particles by size, it is proposed to use electronic correlation of the outputs of photomultipliers viewing light scattered in different directions to provide statistical information on particle shapes. Single-photon counting techniques extend the sensitivity to submicroscopic particles, until they are so small that the diffraction patterns are nearly isotropic.

At higher densities individual particles cannot be resolved. Statistical information on particle shapes may still be obtained by using coherent illumination from a laser source. A theoretical analysis will predict what correlations in the scattered light give information on particle shapes from interference of light scattered from different particles. Experiments will test these predictions.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD	6-1-70	4-30-73
BUDGET PERIOD	5-1-72	4-30-73
ANNUAL EFFORT	$23,599	
MULTIPLE FUNDING	—	
I.D. NUMBER	26 AEK (No task assigned; FY 72 funded)	

SI-SIE-7aA; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801336

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

State of California Department of Public Health
2151 Berkeley Way, Berkeley, California 94704

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

P. K. Mueller, Ph.D.	--- 578-36-4820	--- Chief, AIHL	
A. E. Alcocer	--- 561-09-6606	--- Spectroscopist	State of
J. Murchio	--- 546-28-7630	--- Research Asst. V	California
A. del Rosario	--- 388-40-6173	--- Asst. PH Chemist	Department of
C. Dupree	--- 569-50-0485	--- Animal Tech. II	Public Health
S. Twiss, M.A.	--- 265-50-5535	--- Research Asst. V	

TITLE OF PROJECT

Characterizing Asbestos-Bearing Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

In the first two years of the three-year grant to characterize asbestos-bearing aerosols, we have developed a method for the collection and measurement of asbestiform minerals in air. The means to differentiate asbestos from the many other fibers in air has been accomplished. The method will identify the specific type of mineral fiber composing the various forms of asbestos. Morphology and electron diffraction are used. The method will measure the amount of asbestos by means of electron microscopy according to count and size, and enable a mass calculation from density values. The method yields a true picture of the occurrence of the fibers relative to their size distribution as found in the air with no alteration of their actual airborne size by sample handling. A filter medium of excellent retention for the fine asbestos fibers has been found. Previously it was believed that chrysotile asbestos would be almost the sole type of mineral fiber found, samples of urban air have shown the presence of amosite asbestos, an amphibole type.

The effort of the first two years has produced a method and data on asbestos concentration in a limited number of urban and suburban sites. The proposed work for the third year, now in progress, is to sample other sites, such as downwind from industrial sources. The sampling program has prospects of great production, but the laboratory work is necessarily slow because of the complex and lengthy processes involved in quantitative electron microscopy. We propose to extend the asbestos work for three more years to generate laboratory data and reports from the samples of outdoor air to be taken in the third year of the current funding period. A further extension of sampling is proposed for the continuation period: There may exist an unsuspected and anonymous contamination of the air supply of buildings where asbestos-lined plenum chambers have been installed. We propose to survey public buildings for possible contamination.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-1-71 5-31-73
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $42,966
MULTIPLE FUNDING
I.D. NUMBER 26 AEK (No task assigned; FY 72 funded)

SI-SIE-78A, REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development of a Prototype Nitrate Detector

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. J. Driscoll, Principal Investigator
Mr. J. McCoy
Mr. John Ehrenfeld
Dr. Thomas Dzubay, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Walden Research Corporation, 359 Allston Street, Cambridge, Massachusetts 02139

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Design of a nitrate detector to meet the following criteria:

a. The instrument shall be capable of determining the nitrate content of particles ranging in size from 0.1 microns to 10 microns.
b. The instrument shall be capable of sampling and measuring nitrate concentrations of particles ranging in concentrations between 1 ug/m^3 and 100 ug/m^3.
c. The instrument shall perform the analysis automatically in 60 minutes or less.

Period of Performance: 6-28-72 - 6-27-73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
_x_ CONTRACT No. 68-02-0591
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 6/72 - 6/73
B. $36,759
C. N/A
D. ROAP 26 AEK TASK FY 1972 Funded

SI-SIE-7AA; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Development of Instrumentation for Quantitative Collection of Total Atmospheric Mercury from Ambient Air

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Donald J. Sibbett - Vice President, Manager; Office of Experimental Development
Roger C. Wade - Manager, Product Development
Howard H. Anderson - Senior Engineering Specialist
David C. Sutherland - Research Associate
Eva Wittgenstein, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:
Geomet, Incorporated, 50 Monroe Street, Rockville, Maryland 20850

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The big problem in the analysis of atmospheric mercury and its compounds are their collection.

The purpose of this contract is to develop a prototype collection device(s) and processing techniques for quantitative collection of total atmospheric mercury in the three major forms: (1) inorganic and organometallic particulates, (2) inorganic and organometallic vapors, and (3) elemental mercury. To save time and money, the collection devices are to be used as attachments within conventional Hi-Vol samplers. Criteria for these collection devices include such features as quantitative mercury retention, ease of handling, packaging, storage and shipping, ease of analysis in central or field laboratories, and a high order of sensitivity and selectivity.

Period of Performance: 6/24/72 - 12/23/73

METHOD OF SUPPORT (CHECK ONE)

☐ INTRAMURAL
☒ CONTRACT 68-02-0578
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 6/72 - 12/72
B. $26,090
C. N/A
D. ROAP 26 AEK, Task FY 1972 Funded

SI SIE-29A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT

SCIENCE INFORMATION EXCHANGE

SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY Environmental Protection Agency

TITLE OF PROJECT

Synthesis and Purification of Carcinogenic Air Pollutant Standards

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Herman Stone, Group Leader
Frederick J. Goetz, Research Chemist
Dr. Arthur R. Paterson, Manager, Chem. Physics Dept.
Dr. John P. Sibilia, Research Tech. Supervisor
Webster R. Hudgins, Research Chemist
James E. Meeker, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: Allied Chemical Corporation, Post Office Box 1021R,
Morristown, New Jersey 07960

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of the study is to accelerate the development of new analytical techniques for air pollution measurements by obtaining standard reference materials which will be of a known purity. These standard materials would be necessary prerequisites for accurate control in any laboratory performing these types of analyses. The reference materials may be utilized so that new and older anlaytical methods may be compared and evaluated.

In this study, the contractor will perform the synthesis and/or purification necessary to obtain pure reference standard polynuclear aromatic hydrocarbons. These methods may be already available or developed by the contractor for this purpose.

The anlaytical data and criteria, as well as the percentage of impurities, will have to be explicitly stated for each reference standard. The container will have to be corrosion proof and contamination proof and will not contaminate the sample over a one-year period.

Period of Performance: 6/12/72 - 6/11/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
_X_ CONTRACT 68-02-0545
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

A. 6/72 - 6/73
B. $28,093
C. N/A
D. ROAP 26 AEK, Task FY 72 Funded

SI-SIE-28A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of an Instrumental Monitoring Method for Measurement of Asbestos Concentrations in or Near Sources

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. D. Meakin, Mgr. Physics of Materials Laboratory
Mr. John Stone, Mgr. Control Systems Laboratory, The Franklin Institute
Dr. Jack Wagman, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:
The Franklin Institute, The Benjamin Franklin Parkway, Philadelphia, Pa. 19103

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this contract is to establish the feasibility of an instrumental technique for continual monitoring of asbestos fiber concentrations in air samples at, near, and emitted from asbestos sources. The results of this work should form the basis for a subsequent development of a prototype instrument.

The contractor will perform the following:

a. Conduct a program of experimental work to determine the feasibility of a proposed procedure that can form the basis for an instrument capable of continual or intermittent monitoring of asbestos fiber concentrations in air samples at, near, and emitted from various sources including asbestos mines, asbestos plants, construction sites, and demolition sites. The procedure to be studied shall yield asbestos concentrations in terms of either fiber count or fiber mass per unit volume of air. It shall also include, or be compatible with, a method for restricting the measurement of asbestos concentration to fibers having a minimum and/or a maximum length. The procedure shall be capable of detecting and measuring airborne asbestos particles against the background of a multitude of other types of particles.

b. Establish preliminary design criteria for an instrument based upon the results of the experimental investigation of the proposed procedure.

Period of Performance 6/9/72 - 3/8/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
x CONTRACT No. 68-02-0544
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 6/72 - 3/73
B. $44,966
C. N/A
D. ROAP 26AAN Task 2

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Evaluation of Instrumentation for Monitoring Total Mercury Emissions from Stationary Sources

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

John N. Driscoll, Walden Research Corporation

Dr. Roy L. Bennett, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:
Walden Research Corp., 359 Allston Street, Cambridge, Mass. 02139

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Administrator of EPA, acting under the authority of "Clean Air Amendments of 1970" declared mercury to be a hazardous air pollutant on March 31, 1971. Proposed regulations establishing emission standards for mercury were scheduled for publication by September 1971. Monitoring instrumentation will be needed in order to effectively enforce these standards.

Mercury as a pollutant may occur as vapor and particulate; therefore, monitoring instrumentation must employ techniques capable of detecting both. Although emissions standards may be applied to other sources of mercury, the presently planned standards are for three industries: primary processing of mercury; second recovery of mercury; and the chlor-alkali industry.

The expected range of concentration is from a low level of 1-100 nanograms per cubic meter up to a high of 0.1-0.6 grams per cubic meter. Suitable monitors must be capable of eliminating interferences from other species such as SO_2 and organic compounds which may be present in the mercury emission sources.

The purpose of this program is to identify and test continuous monitoring instrumentation which represents the current state-of-the-art in the measurement of total mercury emissions from stationary sources. The results of the evaluation will be used in determining measurement methods for implementing proposed emission standards.

Period of Performance 6/28/72 - 3/27/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

xx CONTRACT No. 68-02-0590

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 6/72 - 3/73
B. $98,737
C. N/A
D. ROAP 26AAN Task 04

SI SIE-754, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development of Improved Mercury Manual Methods

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Roy L. Bennett, Research Chemist
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The EPA method for sampling mercury emissions from sources designated in the first group of National Emission Standards for Hazardous Air Pollutants (NESHAPS) involves collection of the mercury in impingers of the sampling track. The impinger solution contains iodine monochloride; analysis is made by releasing the collected mercury by chemical reduction and sweeping it into a flameless atomic absorption cell. Potential interferences include reaction of gases (i.e. SO_2) with the impinger solution and release of gases into the absorption cell which absorb at the Hg line (SO_2, aromatic hydrocarbons, etc.). The objective of this task is to devise and test methods which will eliminate these interferences which are expected to be present in mercury emission sources scheduled for consideration as future NESHAPS. Various solution or solid absorbents should be examined for their separation efficiencies of the interferences from the mercury. Alternative sampling procedures will be considered.

Initiated July, 1972; expected completion June, 1974

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Roy L. Bennett

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $14,000
C. N/A
D. ROAP 26 AAN, Task 6

SI-SIE-79A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Evaluation and Modification of Sampling Components for Hazardous Air Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project:

Dr. Roy L. Bennett, Research Chemist
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Sampling train components, order of arrangement, and procedures for measurement of emission of metals (Pb, Cd, V, Mn, Cr, Se, As, etc.) which may be designated by the Administrator of EPA for National Emission Standard for Hazardous Air Pollutants (NESHAPS) must be determined. The commonly used procedure consists of a probe, followed by a filter, which is followed in turn by impingers. In some instances field tests have given indications of penetration of the metallic pollutant past the filter. The objective of this task is to determine the mode of penetration and devise corrective procedures. Low removal efficiencies of the particle entering the impingers might be expected. If the particles have penetrated the control system and the sampling filter, they probably are submicron size, a range for which impingers are not efficient. Investigation of removal efficiencies of standard impinger designs, optimum collection solutions for specific hazardous pollutants will be made and improved filter and impinger designs will be considered.

Initiated October 1972; expected completion June, 1976

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Roy L. Bennett

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $16,800
C. N/A
D. ROAP 26 AAN, Task 7

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of X-Ray Optical Techniques for the Chemical Analysis of Particulate Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. L.S. Berks, Chief, X-Ray Optics Branch
Dr. Jack Wagman, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Naval Research Laboratory, Department of the Navy,
Washington, D.C.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The X-Ray Optics Branch will conduct an investigation to develop x-ray optical techniques for the chemical analysis of particulate pollutants, with emphasis in the following areas:

1. The sensitivity and detectability obtained in the laboratory by NRL personnel will be checked for selected elements using the newest commercial x-ray fluorescence equipment. This will be done at the applications laboratories of instrument manufacturers through arrangements by and, under the direction of, NRL personnel.

2. With advice and recommendations by NRL personnel, a commercial x-ray fluorescence unit will be purchased for use at the National Environmental Research Center, Research Triangle Park, North Carolina. Personnel of NRL will assist EPA personnel initially in use of the equipment, interpretation of data, and in establishing practical test procedures and cost estimates for large scale sampling and analysis.

3. The feasibility of automated x-ray diffraction analysis as an instrumental technique for detecting and monitoring airborne asbestos fiber concentrations will be investigated.

Period of Performance: 3/1/72 - 8/31/72

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
__ GRANT
X INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

A. 3/72-8/72
B. $20,000
C. N/A
D. ROAP 26AAM Task 10

SI-SIE-76A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of a CW Lidar for the Remote Measurement of Smoke-Plume Opacity

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Charles Shoens, Director and Mr. Dave Jackson, Research Engineer, Electromagnetic Techniques Laboratory, Stanford Research Institute
Mr. William D. Conner, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Stanford Research Institute, 333 Ravenwood Avenue, Menlo Park, California 94025

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The contractor will conduct an experimental program to determine the engineering requirements necessary to design an FM-CW lidar with the required range and amplitude resolution necessary to obtain transmittance measurements on distant semi-transparent targets (500 - 1500 feet).

The contractor will construct an engineering evaluation model FM-CW lidar with research flexibility and conduct tests using targets of known transmittance to determine the range resolution and remote transmittance measurement potential of an FM-CW lidar system.

The contractor will use the engineering evaluation model to conduct field tests on real or artificially generated plumes of known transmittance to determine the potential of an FM-CW lidar system for measuring the opacity of smoke-stack plumes.

The contractor will analyze the data obtained with the model, define the limitations and potential of the FM-CW lidar technique for development of a portable, eye-safe instrument for measuring plume opacity, and make recommendations for further development.

Period of Performance 5/30/72 - 5/29/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
_x_ CONTRACT No. 68-02-0543
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 5/72 - 5/73
B. $62,204
C. N/A
D. ROAP 26AAM Task 12

SI-SIE-[illegible], REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Compact Sampling System for Collection of Particulates from Stationary Sources

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Carl Ringwald, Project Director
John W. Davis, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: General Electric Co., Research and Development Center,
P.O. Box 43, Schenectady, New York 12301

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The practical effects of an isokinetic bias on to the magnitude of error of the particulate measurement have not been determined under such real source conditions. Present techniques for obtaining isokinetic sampling under field conditions employs a series of manual operations for data acquisition and equipment manipulations which permit the operator only to approximate isokinetic conditions in a step-wise manner. In order to properly evaluate whether or not isokinetic sampling is truly a requirement under actual field conditions, it is necessary to first have sampling hardware capable of automatically and continuously controlling the sampling conditions at isokinetic by appropriate sensors and feedback control instrumentation.

It is the purpose of this contract work to fabricate and demonstrate an engineering prototype sampling system capable of automatically and continuously controlling the sampling rate to isokinetic velocity. This prototype system may then (subsequently) be used to investigate the technical necessity for isokinetic sampling under both the idealized laboratory conditions and under actual field conditions. If indeed isokinetic sampling is demonstrated as a requirement under field conditions, the engineering prototype sampling system will serve as the prototype for the production model of a compact, portable particulate sampling system having automatic isokinetic sampling rate control.

Period of Performance: 5/4/72 - 7/4/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT 68-02-0546
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

A. 5/72-7/73
B. $57,464
C. N/A
D. ROAP 26 AAM, Task 13

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Effects of Nozzle Design and Sampling Techniques on Aerosol Measurements

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

A. Lennert, Project Director
H. Smith, Principal Investigator
John W. Davis, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Department of the Air Force, Arnold Engineering Development Center, Arnold Air Force Station, Tennessee

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Under present legislation (Air Quality Act of 1970), control of air pollutant emissions as discharged from stacks into the atmosphere requires the capability to measure, and in the future to monitor, the pollutants contained in such discharges. Current technology for particulates and most gases relies on extracting a sample from the discharge stream through a probe. Sampling involves such variables as sampling probe design, probe location, sampling rate, as well as the effect of particle size and distribution. The effects of these variables on the measurement validity have not been established for the conditions to be encountered in such process effluent streams. It is the purpose of this agreement to provide the first basic experimental data and documentation defining both the particulate and gas flow field behaviors at sampling probe nozzles and preliminary flow behavior around bends under conditions simulated to represent the stack sampling problems.

Period of Performance 3/24/72 - 9/23/72

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
__ GRANT
xx INTERAGENCY AGREEMENT EPA-1AG-0139(D)
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 3/72 - 9/72
B. $45,000
C. N/A
D. ROAP 26 AAM Task 14

SI-SIE-78A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Technology Development of In-Situ Measurements of Particle Size

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

A. Lennert, Project Director
M. Farmer, Principal Investigator
John W. Davis, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Dept. of the Air Force, Arnold Engineering Development Center, Arnold Air Force Station, Tennessee 37389

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Information on the size distribution of particles in source emissions is desired to aid in the quantitation of the fine particulate pollution problem and in the development of better particulate control technology. Current methods for this measurement require that a sample be withdrawn from the effluent before analysis can be performed. This act of sampling is thought to cause changes in the size distribution through several mechanisms including deposition in sampling conduits, agglomeration, and fractionation such that the measured distribution is different from that in the undisturbed effluent.

The purpose of this project is to design, develop, and demonstrate the feasibility of a state-of-the-art instrument capable of continuously monitoring particle sizes and size distributions of particles in source emissions. The instrument will be capable of "on-line" data acquisition and analysis of the particle efflux rate with periodic correlation and monitoring of the particle sizes and size distributions. The end product of this study is the technology developed; since this effort is to be performed as a part of a larger Air Force program, hardware may or may not be delivered, but such cannot be determined at this time.

Period of Performance 6/13/72 - 6/12/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
__ GRANT
xx INTERAGENCY AGREEMENT EPA-1AG-0177(D)
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____

A. 6/72 - 6/73
B. $35,000
C. N/A
D. ROAP 26 AAM Task 16

SI-SIE-7A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of a High Purity Filter for Analysis by Advanced Sensitive Analytical Techniques

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Arthur L. Benson (Project Director)	J.E. Oberholtzer
L.I. Damokosh	M. Rossetti
D.W. Lee	J.R. Valentine
P.L. Levins	W.J. Smith
D.B. Lindsay	John W. Davis, Project Officer, Division of Chemistry and Physics, EPA
A.A. Massucco	

NAME AND ADDRESS OF INSTITUTION:

Arthur D. Little, Inc., Aeron Park, Cambridge, Massachusetts 02140

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this program is to develop and characterize a low background filter suitable for sampling sources. It is preferred that this filter be suitable to sources with emissions in the range 450° to 1000° F.

This Contract will have two phases. The two phases shall be performed simultaneously. Phase I will be concerned with the development and characterization of a low background filter satisfactory for elemental analysis at trace levels using atomic absorption and flame emission spectrophotometry. Phase II will be an investigation into the suitability of the developed filter for use in X-ray fluorescence and neutron activation analysis.

The filter developed will be able to withstand high temperatures without alteration.

The filter will be designed to have a reproducible collection efficiency of 99.0% for spherical particles--having a minimum density of 5 g/cc and diameters of 0.05 µm or greater--moving at a velocity of 100 cm/sec.

Period of Performance 6/29/72 - 3/28/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

_x CONTRACT No. 68-02-0585

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 6/72
B. $54,196
C. N/A
D. ROAP 26 AAM, Task 17

SI SIE-1A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Field Study Remote and In-Situ Opacity Monitors

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

William D. Conner, Research Physicist
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this project is to study lidar methods and instrumentation for remote measurement of the opacity and mass content of particulate emissions from selected sources.

Pulsed lidar instrumentation will be used for remote measurement of the light transmittance (opacity) and backscatter of selected sources. In-stack measurements of the light transmittance, mass concentration and size distribution of the particulates in the sources will be made concurrent with the remote measurement, and when feasible, selected alternate techniques will also be used to measure the light transmittance of the sources. The data will be analyzed to determine the accuracy of the remote opacity measurement technique, its relation to the in-stack opacity measurement and the capability of lidar for remote mass measurement of selected sources.

Testing will begin January 1, 1973 and should be concluded by December 31, 1973.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William D. Conner

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $28,000
C. N/A
D. ROAP 26 AAM, Task 19

SI-SIE-29A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Develop Smoke Guidelines

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

William D. Conner, Research Physicist
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this project is to develop smoke comparators for selected sources.

Particulate material of different compositions, sizes and concentrations will be embedded in clear plastic blocks to produce comparators for specific sources. The compositions, sizes and concentrations will be selected to produce guides that will look similar to specific pollution sources when they have equal opacities and are viewed under similar environmental illuminating conditions. The guide will be composed of 5 blocks. Four of the blocks will have opacities of 80, 60, 40 and 20 percent relative to the clear block.

Project initiated 3/72; anticipated completion date 12/74.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William D. Conner

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $28,000
C. N/A
D. ROAP 26 AAM, Task 20

SI-SIE-784; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Filter Efficiency Testing

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

John W. Davis, Engineer
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Various types of filters will be tested in the laboratory using a DOP Pentrometer. A filter test system has been constructed which will make possible the testing of these same filters using generated aerosols under a variety of conditions. The effect of parameters such as face velocity, electrical charge and temperature-humidity on filter efficiency will be determined.

Filter testing is scheduled to begin November 1, 1972.
The tentative completion date is December 31, 1973.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John W. Davis (jwd)

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____

A. 7/72-6/73
B. $28,000
C. N/A
D. ROAP 26 AAM, Task 21

SI-SIE-74A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Develop and Test Interface System for Beta Gauge

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

John W. Davis, Engineer
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The beta gauging technique for continuous mass monitoring of stationary sources has shown considerable promise in initial tests. One of the difficulties is in interfacing the instrument with a gas stream that is hot and wet. A dilution system is one approach to the problem. Development is proceeding along three lines: 1) A disc diluter developed in-house for gases is being adapted for use with particulates; 2) a commercially available dilution probe is being purchased; 3) a boundary layer dilution probe is being developed under contract.

The project began 7/1/72 and should be completed by 6/30/73.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John W. Davis (jer)

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

A. 7/72-6/73
B. $28,000
C. N/A
D. ROAP 26 AAM, Task 22

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Field Test Beta Gauge

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

John W. Davis, Engineer
Stationary Source Emission Measurements Section
Source Emissions Measurement Methods Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A beta gauge for continuous mass monitoring has been developed under contract; there is a European instrument which is commercially available. There is a present need for an available continuous mass monitor. The beta gauge technique appears to fulfill this need, but an extensive field testing program is necessary to establish capabilities and limitations. Arrangements have been made with a local power company to run tests on a controlled stack. Parallel mass measurements will be made using the EPA sampling train. Testing will begin January 1, 1973 and should be completed on the power plant stack by June 30, 1973. It is anticipated that the testing of other types of sources will be made in the future.

METHOD OF SUPPORT (CHECK ONE)
☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John W. Davis (JBN)

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $14,000
C. N/A
D. ROAP 26 AAM, Task 23

SI-SIE-76A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Feasibility Study of In-Situ Source Monitoring of Particulate Composition by Raman or Fluorescence Scatter

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Charles J. Schoens, Director, Electromagnetic Techniques Laboratory
Mr. M. Lattimer Wright, Senior Research Engineer, Electromagnetic Techniques Laboratory
Mr. Leonard Gasiorek, Electromagnetic Techniques Laboratory
Mr. John S. Nader, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: Stanford Research Institute, 333 Ravenswood Avenue,
Menlo Park, California 94075

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Health effects of inhaled particulates are related to the chemical composition of the particulate. Current efforts are underway to analyze by advanced electro-optical techniques aerosols collected from various industrial sources. The collection procedures require probe sampling and possibly sample dilution and/or preconditioning which pose questions about the integrity of the aerosol. The analytical methods include scanning electron microscopy with energy dispersive analysis and electron probe technique which give elemental composition. In-situ analysis avoids the need to withdraw a sample from the source. Raman or fluorescence scattering spectroscopy identifies the molecular composition rather than only the elemental constituents. Raman scatter analysis is known to be feasible using laser radiation on bulk samples of particulates. Some research is underway by the Air Force on the development of micro-Raman techniques applied to individual particles in a sample collection.

The objective of this study is to determine the feasibility of identifying the molecular composition of particulates in the moving gas stream of a pollutant source without extracting a sample. This may be done by either Raman or fluorescence scattering, whichever offers the better chance of success from theoretical considerations or from related research studies. The study will be conducted under controlled laboratory conditions.

The contractor shall study the feasibility of in-situ molecular analysis of particulate in a gas stream by Raman or fluorescence scattering techniques.

Period of Performance: 6/27/72 - 12/26/72

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT 68-02-0594
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 6/72-12/72
B. $24,698
C. N/A
D. ROAP 26 AAM, Task 25

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Sampling Interface for Quantitative Transport of Aerosols

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. Werle, Project Director
John W. Davis, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

IIT Research Institute, 10 West 35th St., Chicago, Illinois 60618

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The development of improved control technology, control practices, and emission information requires instrumentation and methods to measure and monitor pollutants in a dynamic mode. In the case of particulate emissions, continuous monitoring is dependent not only upon the development of suitable sensing systems, but also upon a sampling system which is capable of delivering the aerosol from the source to the sensor without modifying the aerosol property to be measured. Experience with manual sampling of particulate has demonstrated the problem of particles depositing on the probe walls with retention being a very appreciable amount of the total sample. Theory predicts that a combination of deposition and reentrainment mechanisms are operative in varying degrees which are determined by the aerosol properties and flow conditions. The overall effects, at least theoretically, can prevent quantitative transport of the aerosol and modify the size distribution.

It is the purpose of this contract work to develop and demonstrate through controlled laboratory testing, a sampling interface system which will permit the transport of aerosols without modification for total mass rate measurement and also for size distribution measurement from the point of sampling to a sensor.

Period of Performance 6/26/72 - 6/25/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
x CONTRACT No. 68-02-0579
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

A. 6/72 - 6/73
B. $63,737
C. N/A
D. ROAP 26 AAM Task 26

SI-SIE-7bA; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800872

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION
University of Washington
Seattle, Washington 98105

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Pilat, M. J., 535-34-1654, Associate Professor of Air Resources Engineering
Charlson, R. J., 563-48-6429, Associate Professor of Atmospheric Chemistry

TITLE OF PROJECT
Plume Opacity and Air Pollutant Particle Properties

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The objective of the proposed research project is to establish a relationship between plume opacity and the properties of particulate air pollutant emissions. Measurements of the plume opacity and the particle properties (size distribution and weight concentration) at air pollutant sources will be compared with a theoretical analysis of this relationship. The plume opacity is of primary significance because it is the quantity specified in air pollution control regulations as the visual standard for smoke plumes. The results of the proposed research will assist in designing particulate air pollutant control equipment which can meet opacity standards (Ringelmann numbers) and in writing air pollution control regulations which are consistent. The difficulties in designing control equipment to satisfy opacity regulations are well documented.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 5-1-72 4-30-74
BUDGET PERIOD 5-1-72 4-30-73
ANNUAL EFFORT $38,198
MULTIPLE FUNDING —
I.D. NUMBER 26AAM-28

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of Range Squared and Off-Gating Modifications for a Lidar System

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. George Bethke , Physical Chemist, General Electric Company

Mr. William D. Conner, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION: General Electric Company, Space Sciences Laboratory,
P. O. Box 8555, Philadelphia, Pennsylvania 19101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A lidar technique has been developed for remote measurement of the transmittance of smoke-stack plumes. A standard pulsed lidar is used for the measurement where atmospheric backscatter of the outgoing pulse is observed as a function distance. The transmittance of a plume is determined by firing the laser pulse through the plume and measuring the discontinuity between the atmospheric backscatter of the pulse just in front of and behind the plume, Extensive testing of the system has shown that the accuracy of the measurement is affected by the intense pulse backscattered by the plume and that data reduction is complicated by the inverse square range dependence of the signal return. Off-gating the photomultiplier detector of the lidar receiver when the backscatter from the plume is received has improved but not eliminated the error. This project is designed to eliminate the lidar error in measuring plume transmittance due to plume backscatter of the laser radiation and to linearize the backscattered signal display with respect to range.

The study is designed (1) to eliminate the dominant source of error in the remote measurement of the transmittance of smoke-stack plumes using lidar, and (2) to improve the data presentation of the lidar transmittance measurement.

Period of Performance 6/24/72 - 12/23/73 .

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
xx CONTRACT No. 68-02-0570
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 6/72 - 12/72
B. $28,822
C. N/A
D. ROAP 26AAM Task *

*Funded from FY 72 Funds - Not Continued

SI-SIE-7bA; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801136

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT

Structure and Reactivity of Adsorbed Oxides of Sulfur

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Jack H. Lunsford
Chemistry Department, Texas A&M University
Professor

NAME AND ADDRESS OF APPLICANT INSTITUTION
Texas A & M Research Foundation
P.O. Faculty Exchange H
College Station, Texas 77843

SUMMARY OF PROPOSED WORK – (200 words or less – Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of the proposed research is to determine the structure and reactivity of adsorbed oxides of sulfur and other small sulfur-containing molecules. Using electron paramagnetic resonance and infrared spectroscopy it should be possible to identify the important adsorbed sulfur-containing species and to follow their various unimolecular or bimolecular transformations. Thermal as well as photochemical reactions will be studied for molecules adsorbed on different types of surfaces including zeolites, MgO, ZnO and V_2O_5. Particular attention will be given to understanding the role of the SO_2^- radical ion in the catalytic oxidation of SO_2 to SO_3. Adsorbed S_2^-, CS_2^-, and COS^- molecule ions along with their neutral analogs will also be investigated. Hyperfine splitting from molecules enriched in ^{33}S should give detailed information about the electronic and geometric structure of the molecules. In addition, ^{18}O will be used to follow isotope exchange reactions between the adsorbed molecules or between adsorbed molecules and adsorbent ions. The gas phase products will be analyzed with the aid of a mass spectrometer.

The results should find application in development of efficient adsorbents or catalysts for removing SO_2 from effluent gases. The proposed work should also elucidate the basic chemistry of heterogeneious reactions that occur on metal oxide or aluminum silicate aerosols. These reactions may take place in the atmosphere or in the respiratory tract.

PROFESSIONAL SCHOOL (medical, dental, etc.) WITH | SIGNATURE OF PRINCIPAL INVESTIGATOR | DATE

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD	5-1-70	6-30-73
BUDGET PERIOD	5-1-72	6-30-73
ANNUAL EFFORT	$16,600	
MULTIPLE FUNDING	—	
I.D. NUMBER	21 AJX-2	

PHS-166

SI-SIE-78A, REV. 2-54

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801340

SUPPORTING AGENCY: **Environmental Protection Agency**

NAME AND ADDRESS OF APPLICANT ORGANIZATION
The Aerospace Corporation, P. O. Box 95085 Los Angeles, California 90045

SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Seymour Siegel	120-24-3363, Head, Chemical Physics Department
Henry J. Judeikis	322-30-2350, Member of Technical Staff, Chemical Physics Department
Herbert Hedgpeth	557-54-1387, Associate Technical Staff, Chemical Physics Department
Tom Stewart	555-56-6[illegible]2, Technician Staff, Chemical Physics Department

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TITLE OF PROJECT
The Role of Solid-Gas Interactions in Air Pollution

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The research objectives of this proposed study are to quantitatively determine the extent to which undesirable reactions of gaseous air pollutants can be catalyzed on the surface of airborne and/or ground level particulate matter. We have shown in model calculations (contained herein) that thermal-and/or photo-catalytic processes are capable of competing very favorably with homogeneous gas phase reactions known to be of importance in polluted atmospheres, and therefore require further study in order to assess the actual contribution of these reactions to air pollution problems.

The proposed experimental study consists of three phases; preliminary screening, detailed analysis of selected catalyst-gaseous reactions, and utilization of actual materials from the environment as catalysts. The research objectives of the preliminary screening phase are to establish, on the basis of existing literature data and selected laboratory experiments, those catalytic processes and materials that are likely to be of importance in polluted atmospheres. We will be primarily interested in processes such as the catalytic oxidation of low concentrations of NO, SO_2, olefins, and mixtures of these gases in dry and moist air at ambient temperatures. Candidate catalysts will be selected from carbon, alumina, silica, oxides of iron and other materials which occur in sufficient abundance in polluted atmospheres to be of interest. The research objectives of the second phase of the study will be to quantitatively establish the importance of these processes and materials selected during the preliminary screening. Particular attention will be given to the effects of various experimental parameters (temperature, gas-catalyst contact time, reactant concentrations, etc.) on the catalytic processes. Well characterized laboratory chemicals will be used in phase one and two.

The research objectives of the third phase will be to assess the importance of catalytic processes using actual materials from the environment such as collected airborne particulates, asphalt, exposed metals, soil, soot, etc. In addition, if earlier experiments warrant it, additional studies can be carried out utilizing airborne particulates produced in the laboratory.

LEAVE BLANK

METHOD OF SUPPORT: ____ INTRAMURAL ____ CONTRACT X GRANT ____ INTERAGENCY ____ OTHER

PROJECT PERIOD	6/1/71	9/30/73
BUDGET PERIOD	10/1/72	9/30/73
ANNUAL EFFORT	$40,000	
MULTIPLE FUNDING		
I.D. NUMBER	ROAP 21 AJX, Task 3	

SI-811-70A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800845

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The Regents of the University of California
c/o University of California, Santa Barbara, California 93106

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

H. P. Broida, 523-16-9263, Professor of Physics, Department of Physics

C. J. Duthler, 381-42-4506, Postgraduate Research Assistant, Department of Physics

TITLE OF PROJECT

Size and Growth Measurements of Metallic Particles

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

We propose to study the methods of particulate production and the optical properties of several metallic and metallic oxide particles having diameters less than 0.1 u. The goals of this research are 1) To determine and measure the nucleation, growth, and removal mechanisms of very small metallic and metallic oxide particles; 2) To concurrently further refine our measurements of plasma resonance scattering for measurements of the size and composition of metallic particles; 3) To investigate laser light scattering from small particles and the use of Raman scattering or depolarization and line broadening phenomena to yield formation of small particle sizes; 4) To investigate the growth of larger, secondary particles from very small particles; and 5) To apply the knowledge gained from laboratory studies to detection and monitoring of small particles in the atmosphere.

The studies will be carried out using a system for producing metallic and metallic oxide particles that we have developed at the University of California, Santa Barbara. In initial experiments, we have produced particles ranging in size from 2×10^{-3} to 1 u of the following materials: Pb, Zn, Na, K, Ba, Bi, Mg, Ag, BaO, PbO, MgO, PbCl, and PbBr.

Properties of these particles will be studied using laser and white light scattering and absorption and electron microscopy. These and other facilities are available in our well equipped laboratories in the Department of Physics.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 3-1-72 2-28-75
BUDGET PERIOD 3-1-72 2-28-73
ANNUAL EFFORT $44,049
MULTIPLE FUNDING —
I.D. NUMBER 21 AJX-4

SI-SIE-7aA; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800871

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The University of Texas at Austin, Austin, Texas 78712

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

James R. Brock, 455-48-5361, Professor, Department of Chemical Engineering.

TITLE OF PROJECT

Dynamical Theories of Knudsen Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Rigorous theoretical analysis is proposed to develop some of the fundamental information, now lacking, necessary in the various activities leading to reduction and control of air pollution by particulates. Specifically, for the three years of support requested, we propose to carry out theoretical investigation of the following subjects:

(a) Condensation and evaporation of aerosol particles in the sub-micron range.

(b) Charging rates and charge distributions of aerosol particles, particularly in the sub-micron range.

(c) Motion of single non-spherical particles in the sub-micron size range.

(d) Evolution of size distributions of aerosols with particular emphasis on the atmospheric aerosol.

(e) Evolution of the distribution of attached trace substances with particular emphasis on the atmospheric aerosol.

The rigorous analyses of these various processes will be applied to problems of importance in particulates control such as particle growth by condensation in the atmosphere, electrostatic precipitation, deposition of non-spherical particles in control devices and in the lung, and evolution of the distribution of size and chemical composition of the atmospheric aerosol.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD	6-1-72	5-31-75
BUDGET PERIOD	6-1-72	5-31-73
ANNUAL EFFORT	$19,067	
MULTIPLE FUNDING	—	
I.D. NUMBER	21 AJX-5	

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Coordinating Research Council, Inc. and Environmental Protection Agency

TITLE OF PROJECT: Determination of the Formation Mechanism and Composition of Photochemical Aerosols (CRC-APRAC Project CAPA-8) (EPA Contract No. 68-02-0562)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. G.M. Hidy, Program Manager
Science Center, North American Rockwell
Thousand Oaks, California

Dr. Marijon Bufalini, Project Officer
Div. of Chemistry & Physics, EPA

Dr. M. Lipeles, Principal Investigator

NAME AND ADDRESS OF INSTITUTION:

North American Rockwell Science Center
1049 Camino Dos Rios, Thousand Oaks, California 91360

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this project is to determine the feasibility of producing aerosols photochemically in a fast flow reactor with minimum wall involvement. Specifically, light scattering aerosols will be produced photochemically in gas mixtures containing hydrocarbon vapors, nitrogen oxides and air, maintaining minimum wall involvement and reactant concentrations as close to atmospheric levels as possible. Samples of aerosol will be collected and chemically analyzed for nitrates and organics.

Period of Performance: 6/24/72 - 2/23/73 (Total project expected to be extended until 6/75)

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT* 68-02-0562
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF Project Officer ~~PRINCIPAL INVESTIGATOR~~ Marijon Bufalini

~~PROFESSIONAL SCHOOL~~ (medical, grad. etc., Environmental Protection Agency, NERC Research Triangle Park, N.C. 27711

A. 6/72-2/73
B. $62,475
C. Environmental Protection Agency - $20,825
Coordinating Research Council, Inc. - $41,650
D. 21 AJX - 6

SI-SIE-79A; REV. 9-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Study of Gas-Particle Interactions in Photochemical Air Pollution

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Jack L. Durham
Research Chemist
Atmospheric Aerosol Research Section, Atmospheric Chemistry and Physics Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:
Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Inorganic aerosols of known composition and primary particle size will be made with an exploding-wire aerosol generator. Samples will be collected with a point-to-plane electrostatic precipitator, the "plane" being a piezoelectric quartz crystal capable of detecting a mass change of 10 ng. Air containing known concentrations of trace contaminants (SO_2; NO_2; H_2O; etc.) will be flowed over the samples and the mass change observed. Concentrations will be changed in order to obtain multi-component adsorption isotherms. Companion samples will be in-line and used for infrared identification of surface species. The effect of ultraviolet light on formation and concentration of surface species will be determined.

Project initiated 7/72; anticipated completion date 7/77.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT*
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Jack L. Durham

~~PROFESSIONAL SCHOOL~~ (medical, graduate, etc.) Environmental Protection Agency, NERC
Research Triangle Park, N.C. 27711

A. 7/72-6/73
B. $42,000
C. --
D. 21 AJX - 7

SI-SIE-73A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Study Chemisorption and Reaction of Pollutant Gases on Single, Levitated Particles

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. William E. Wilson, Jr.
Chief, Atmospheric Aerosol Research Section
Atmospheric Chemistry and Physics Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:
Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Single particles of pure compounds, solutions, and photochemically generated aerosols will be levitated and their diameter and refractive index determined with a Science Spectrum single particle photometer. Changes in the diameter and refractive index will be determined as temperature and relative humidity are changed and as a variety of reactive gases are passed over the particle.

Project initiated 7/72; anticipated completion date 7/77.

METHOD OF SUPPORT (CHECK ONE)
- X INTRAMURAL
- __ CONTRACT
- __ GRANT
- __ INTERAGENCY AGREEMENT
- __ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William E. Wilson Jr.

~~PROFESSIONAL SCHOOL~~ (medical, graduate, etc.) Environmental Protection Agency, NERC
Research Triangle Park, N.C. 27711

A. 7/72-6/73
B. $14,000
C. --
D. 21 AJX - 10

SI-SIE-73A; REV. 8-64

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Environmental Chamber Studies of Atmospheric Aerosols

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. William E. Wilson, Jr.
Chief, Atmospheric Aerosol Research Section
Atmospheric Chemistry and Physics Branch
Division of Chemistry and Physics, EPA

Arthur Levy
Program Director
Battelle Memorial Institute

David Miller
Principal Investigator
Battelle Memorial Institute

NAME AND ADDRESS OF INSTITUTION:
Battelle Memorial Institute, 505 King Avenue
Columbus, Ohio 43201

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Studies of photochemical aerosol generated from auto exhaust and pure hydrocarbons will be made in Battelle's 610 cu. ft. chamber. Runs will be made with exhaust generated from both leaded and unleaded gasolines and with varying amounts of primary auto exhaust aerosol present. Studies will also be made with individual pure hydrocarbons with varying amounts of pre-existing particulate matter. In addition to normal gas phase monitoring, extensive aerosol monitoring will be performed. This will include particle size distribution from .005 micron to 10 micron diameter, light scattering, light absorption, and aerosol mass. Collected aerosol will be studied by microscopy and analyzed for organic and inorganic content. The data will be utilized in the development of chemical and physical models of photochemical aerosol formation.

Period of Performance: 6/29/72 - 6/28/73

ETHOD OF SUPPORT (CHECK ONE)

_ INTRAMURAL
X CONTRACT 68-02-0574
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

Project Officer SIGNATURE OF ~~PRINCIPAL INVESTIGATOR~~ William E Wilson Jr.
~~PROFESSIONAL SCHOOL~~ (medical, graduate, etc.) Environmental Protection Agency, NERC
Research Triangle Park, N.C. 27711

A. 6/72-6/73
B. $80,674
C. N/A
D. Fiscal Year 1972 Program. (Related to Task 8, ROAP 21 AJX)

SI-SIE-7aA; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800886

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Arkansas - Fayetteville, Arkansas 72701

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Blyholder, George D. (323-24-2177), Professor, Department of Chemistry
Research Associate, to be selected
Benson, Robert (264-70-3913), Research Assistant, Dept. of Chemistry
Research Assistant, to be selected.

TITLE OF PROJECT

Heterogeneous Reactions in Air Pollution

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

It is the overall objective of this project to determine the role of solid particulate matter in the chemical reactions which govern atmospheric pollution. Among the commonest solid particulates are Fe_2O_3, CaO, MgO, $CaSO_4$ and various salts containing Ca^{++}, NH_4^+, Na^+, $SO_4^{=}$, Cl^-, and NO_3^-. By adsorption these particulates may be sinks for such air pollutants as SO_2, NO_2, CO_2, NH_3, ozone and organic oxidants and so transport them to plants and animals or by catalytic reactions be sources of ozone, peroxides and organic oxidants. We have already found several reactions of atmospheric pollutants on Fe_2O_3 and that such gases as NH_3, CO_2, and NO adsorb on $CaSO_4$. It is proposed to determine the structure and reactivity, both thermal and photochemical, of the atmospheric pollutants on Fe_2O_3 (for those systems we have not already investigated), $CaSO_4$, (some work already done), CaO, MgO, $CaCl_2$, Na_2SO_4 NaCl, NH_4SO_4 and such other oxides and salts as seems appropriate.

In considering a particular metal oxide or salt our procedure is to first use a volumetric, microbalance, or chromatographic technique to determine the amount of various atmospheric pollutants that will adsorb. Then the structures of adsorbed species are determined by infrared spectroscopy. Finally reactivity of individual adsorbed gases or combinations of gases may be determined by observing the composition of the gas phase above the surface by mass spectral or chromatographic techniques and by observing the changes in infrared spectra of the surface species as the sample is illuminated with a mercury arc lamp or heated.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD	5-1-72	4-30-74
BUDGET PERIOD	5-1-72	4-30-73
ANNUAL EFFORT	$35,910	
MULTIPLE FUNDING	—	
I.D. NUMBER	21 AJX	

SI-SIE-7aA; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Coordinating Research Council, Inc. and Environmental Protection Agency

TITLE OF PROJECT: Study of Formation and Composition of Photochemical Aerosols (CRC-APRAC Project CAPA-8) (EPA Contract No. 68-02-0557)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. W.C. Kocmond Head, Atmospheric Science Section Exploration System Dept. Cornell Aeronautical Lab., Inc. Buffalo, New York 14221	Dr. Marijon Bufalini, Project Officer Div. of Chemistry & Physics, EPA	Dr. K.T. Whitby Dir. of Particle Technology Laboratory Dept. of Mechanical Engr. University of Minnesota Minneapolis, Minn 55455

NAME AND ADDRESS OF INSTITUTION:

Cornell Aeronautical Laboratory, Inc.
Buffalo, New York 14221

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this program is to obtain information on the formation and growth of aerosols in urban atmospheres by conducting a study in controlled simulated atmospheric environments. The effects of varying conditions, such as reactant concentration, radiation and mixing rate, on the formation of aerosols will be investigated. Specific activities include: (a) Limited theoretical studies of chamber dynamics, gaseous and aerosol losses in the chamber and connecting lines. (b) A comparative study using a 20,800 ft^3 chamber at Cornell Aeronautical Laboratory and a 630 ft^3 chamber at the University of Minnesota. (c) An experimental study of aerosol kinetics, aerosol and gas losses, influence of chamber size and wall effects.

Period of Performance: 6/16/72 - 5/15/73 (Total project expected to be extended until 6/75)

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT 68-02-0557
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

Project Officer SIGNATURE OF ~~PRINCIPAL INVESTIGATOR~~ Marijon Bufalini

PROFESSIONAL SCHOOL (medical, graduate, etc.) Environmental Protection Agency, NERC Research Triangle Park, N.C. 27711

A. 6/72-5/73
B. $54,645
C. Environmental Protection Agency - $18,215
Coordinating Research Council, Inc. - $36,430
D. 21 AKB - 2

SI-SIE-71A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Coordinating Research Council, Inc. and Environmental Protection Agency

TITLE OF PROJECT: Haze Formation: Its Nature and Origin
(CRC Project CAPA-6)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Ronald K. Patterson	Arthur Levy	David Miller	Warren Schwartz
Project Officer,	Program Director	Principal Investigator	Principal Investigator
Division of Chemistry and Physics, EPA	Battelle Memorial Institute	Battelle Memorial Institute	Battelle Memorial Institute

NAME AND ADDRESS OF INSTITUTION:

Battelle Memorial Institute, 505 King Avenue
Columbus, Ohio 43201

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of the program is to determine the relationships which exist between the chemical composition of light-scattering particles, the composition of the ambient atmosphere, and the attenuation of visibility in the atmosphere. Ultimately, the compositional relationships to light scattering will be used to establish the contribution of auto exhaust to urban haze. Field sampling will be undertaken in three cities - New York, St. Louis, and Los Angeles - having widely varying meteorology, emission inventories and photochemical activity. Continuous monitoring of meteorological conditions, light scattering and gas-phase composition will be performed concomitant with aerosol collections. Determination will be made of the organic and inorganic composition of airborne particles in the light-scattering size range. The ultimate purpose is to be able to determine the proportion of atmospheric haze due to auto exhaust. This will, in turn, permit a more rational choice of control options and allow assessment of the extent to which changes in automobile emissions affect visibility.

Period of Performance: 6/7/72 - 6/6/73

ETHOD OF SUPPORT (CHECK ONE)

_ INTRAMURAL
X CONTRACT 68-02-0276
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

Project Officer SIGNATURE OF ~~PRINCIPAL INVESTIGATOR~~ William E. Wilson Jr.
for Ronald K. Patterson

~~PROFESSIONAL SCHOOL~~ (medical, graduate, etc., Environmental Protection Agency, NERC
Research Triangle Park, N.C. 27711

A. 6/72-6/73
B. $98,988
C. Environmental Protection Agency - $32,988
Coordinating Research Council, Inc. - $66,000
D. 21 AKB - 3

SI-SIE-76A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800868

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Statewide Air Pollution Research Center
University of California, Riverside, CA 92502

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Edgar R. Stephens 021-22-7438 Chemist Statewide Air Pollution Research Center

TITLE OF PROJECT

Formation of Photochemical Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The overall aim of the proposed grant is to establish a better understanding of the aerosol component of the photochemical air pollution as it exists in the South Coast Air Basin of California. The chemistry of the aerosol and its formation will be emphasized as opposed to the physics. This will be done by comparing the ambient aerosol which is present very frequently in Riverside with synthetic aerosols prepared in the laboratory by various photochemical and dark reactions. A tube flow reactor and a bottle reactor will be used to prepare the laboratory aerosols. Aerosols prepared synthetically and the ambient aerosols will be characterized by two major procedures, each with several auxiliary techniques. One technique is particle counting by light scattering. This will be used to quantify the aerosols studied. Impaction of aerosols for analysis by infrared spectroscopy and other analytical procedures will be the second technique. This will permit chemical identification of the aerosol and comparison of the chemical compositions of ambient and synthetic aerosols.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 3-1-72 2-28-75
BUDGET PERIOD 3-1-72 2-28-73
ANNUAL EFFORT $43,519
MULTIPLE FUNDING
I.D. NUMBER 21 AKB-5

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800670

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Washington State University
Pullman, Washington 99163

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Rasmussen, Reinhold A. 010-28-4755 Associate Plant Physiologist
Air Pollution Research, College of Engineering

Consultant

Stephens, Edgar R. 021-22-7438 Chemist, Statewide Air Pollution Research Center,
University of California at Riverside

TITLE OF PROJECT

~~ANALYSIS OF THE~~ ATMOSPHERIC PHOTOCHEMICAL REACTION OF TERPENES (RG)

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The overall objective of the proposed investigation is a laboratory and field study of the air chemistry fate of the volatile terpenes emitted into the atmosphere by forests. The first objective is to irradiate controlled concentrations of naturally emitted foliage terpenoid volatiles to determine the disappearance rates of the various compounds. The second objective is to determine the distribution of naturally occurring terpenes and light hydrocarbons in rural forest atmospheres. The relative amounts of these hydrocarbons will be compared with the distributions reported for known sources, including the forest tree-types, urban air masses, and automobile exhaust. The third objective is to irradiate samples of ambient forest air and determine the disappearance rates of the terpene and light hydrocarbons in air masses experiencing different levels of extant air pollution.

This project is appropriate because there are no atmospheric photochemistry studies of the terpenes and even studies of isoprene are very limited. It is important to understand the atmospheric fate of these ubiquitous, naturally occurring, reactive hydrocarbons in the environment in view of their natural and aesthetic role in rural environs. The project will also help to define the air pollution potential these terpenoid materials have in recreational atmospheres. This is especially important as America's vacation lands are increasingly experiencing an influx of pollutants from auto exhaust, campfires, and smog. The effect of these pollutant types mixing with an atmosphere already rich in reactive hydrocarbons is unknown. However, it is possible that the damage to the ponderosa pine forests in the San Gabriel and San Bernardino Mts. of southern California is due in part to further photochemical reactions of the high oxidant but depleted hydrocarbon levels in the invading L. A. smog with the fresh supply of reactive terpenes in the forest atmosphere.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 3-1-71 5-31-74
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $21,668
MULTIPLE FUNDING —
I.D. NUMBER 21 AKB-6

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800308

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

California Institute of Technology
1201 E. California Blvd., Pasadena, Calif. 91109

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Friedlander, S. K., 064-20-8792, Professor, Chemical Engineering and Environmental Health Engineering

Husar, R. B., 475-60-7641, Research Fellow, Environmental Engineering Science

TITLE OF PROJECT

Investigation of Submicron Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

A three-year experimental study of the processes controlling the size spectra of Knudsen (submicron) aerosols is proposed. Emphasis will be on complete size distribution measurements and on the determination of condensation and coagulation rates in the Knudsen range. The test aerosols will be produced by combustion, and by photochemical nucleation, and aged in a large teflon balloon ($\approx 50\ m^3$) or in a flow reactor, depending on the mechanism and rate processes involved. A modified commercial single-particle optical counter will be used to measure the size distribution in the diameter range $0.15 < d < 1.0 \mu m$. Support is requested for the construction of a simple, inexpensive electrical mobility analyzer, capable of size distribution measurement in the size range $0.003 < d < 0.2 \mu m$. The size distribution in the range $0.002 \lesssim d < 0.1 \mu m$ will also be measured by a diffusion battery-Aitken nuclei counter combination. The results will be compared critically with the available theories as well as with relevant atmospheric aerosol data. The proposed laboratory study will be coordinated with smog aerosol measurements in the Los Angeles basin (supported by other sources), and the results will be compared. It is hoped that this study will help to elucidate the role of coagulation, condensation and other physical transfer processes in urban aerosol dynamics and in the formation of combustion aerosols.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-1-72 5-31-75
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $31,835
MULTIPLE FUNDING
I.D. NUMBER 21 AKB-7

337

SI-SIE-73A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801174

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Battelle Columbus Laboratories, 505 King Avenue, Columbus, Ohio, 43201

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

	Social Security Number	Title	Department
Warren E. Schwartz	100-38-5504	Research Chemist	All personnel listed are members of the Department of Biology, Environment, and Chemistry
Albert H. Adelman	119-26-8253	Chief	
Glenn W. Kinzer	155-18-0164	Associate Chief	
Rodger D. Foltz	390-30-4997	Fellow	
Robert J. Jakobsen	330-24-1139	Senior Chemist	
Arthur Levy	035-12-1027	Senior Fellow	
David F. Miller	276-38-7581	Research Chemist	

TITLE OF PROJECT

Chemical Characterization of Model Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

In the proposed program model aerosols will be generated from selected individual hydrocarbons representative of those emitted into the atmosphere from natural and technological sources. The organic fraction of the aerosols will be characterized in detail. (Individual reaction products will be identified using techniques including gas chromatography combined with mass spectrometry (GC-MS) and gas chromatography combined with interferometric infrared spectroscopy (GC-IR.) The effects of various simulated atmospheres on yields and type of products generated from different hydrocarbons (aromatics, olefins, parafins, terpenes) and their contribution to aerosol formation will be investigated. Generation of toxic and/or noxious reaction products will be noted. It is anticipated that the proposed research will materially enhance understanding of organic chemical reactions occurring in the atmosphere.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-15-72 6-14-73

BUDGET PERIOD 6-15-72 6-14-73

ANNUAL EFFORT $69,601

MULTIPLE FUNDING

I.D. NUMBER 21 AKB-8

SI-SIE-70A) REV. 9-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Composition of Atmospheric Aerosols by Infrared Emission, Absorption and GC-IR Studies

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Ronald K. Patterson
Research Chemist
Atmospheric Aerosol Research Section, Atmospheric Chemistry and Physics Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:
Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Fourier transform spectroscopy will be used to study the infrared spectrum of atmospheric and model aerosols. Aerosols will be collected on infrared transparent filters and plates and their absorption and emission spectra determined. Collected aerosols will be extracted with organic solvents, separated into organic classes by chemical techniques. The classes will be further separated by gas chromatography and the individual components identified by their infrared spectrum.

Project initiated 7/72; anticipated completion date 6/73

METHOD OF SUPPORT (CHECK ONE)
x INTRAMURAL
___ CONTRACT*
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

William E Wilson Jr.
for
SIGNATURE OF PRINCIPAL INVESTIGATOR Ronald K. Patterson

~~PROFESSIONAL SCHOOL~~ (medical, graduate, etc.) Environmental Protection Agency, NERC
Research Triangle Park, N.C. 27711

A. 7/72-6/73
B. $42,000
C. --
D. 21 AKB - 11

SI-SIE-7A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Role of H_2O in Aerosol Formation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. William E. Wilson, Jr.
Chief, Atmospheric Aerosol Research
Section
Atmospheric Chemistry and Physics Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Studies will be made with a 400-liter smog chamber, operated in the dynamic mode, to determine the role of water in photochemical aerosol formation. Previous studies have indicated that, for certain hydrocarbon-NO_x systems at least, aerosol formation, as measured by light scattering, increases as the relative humidity is increased. The presence of water vapor also affects the rates of formation and concentration of gas phase components. Studies will be made to determine whether the effect of light scattering is due to physical adsorption of water vapor on particles or a chemical effect on rates and reaction paths.

Project initiated 7/72; anticipated completion date 6/73

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William E Wilson Jr.

~~PROFESSIONAL SCHOOL~~ (medical, graduate, etc.) Environmental Protection Agency, NERC
Research Triangle Park, N.C. 27711

A. 7/72-6/73
B. $28,000
C. --
D. 21 AKB - 12

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE. NO.

AGENCY NO. 801367

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The Research Foundation of the State University of New York
P.O. Box 7126, Albany, New York 12224

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Assoc. Prof., At. Sci.
Volker A. Mohnen, Co-Principal Investigator, 122-42-2165, Assoc. Dir., ASRC
Andrew J. Yencha, Co-Principal Investigator, 568-46-2226, Assistant Prof., Chem.
Eugene H. McLaren, Co-Investigator, 079-18-4[illegible]52, Professor of Chemistry
Calvin Blakley, Research Associate, 122-42-123[illegible], Research Assistant, Chemistry
Peter E. Coffey, Research Associate, 012-30-6[illegible]94, Research Assistant, ASRC

TITLE OF PROJECT

Non-Photochemical Formation of Atmospheric Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The goal of this proposed research is to determine the significance of non-photochemical gaseous reactions for the formation of aerosols in the atmosphere, and to construct a comprehensive atmospheric model based on reaction rate constants and measured concentrations of reactants. This will, hopefully, lead to new insights into aerosol formation and distribution.

Specifically, we are interested in investigating the kinetics and thermodynamics of the gas phase reactions of sulfur dioxide with ammonia and olefins, respectively, in the absence of light and in a simulated atmosphere to determine the extent to which these non-photochemical reactions contribute to aerosol formation. In addition, we want to develop an atmospheric sulfur dioxide model using our reaction rate data to describe the sources and sinks of sulfur dioxide in the atmosphere.

Furthermore, we propose to investigate, whether or not nitric acid can be formed through catalytic, ion-induced reactions in a simulated atmosphere containing concentrations of trace gases such as NO_x, NH_3, O_3, H.C., as found in urban atmospheres.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT [✓ GRANT] ___ INTERAGENCY ___ OTHER

PROJECT PERIOD	6-23-72	5-22-75
BUDGET PERIOD	6-23-72	5-22-73
ANNUAL EFFORT	$13,778	
MULTIPLE FUNDING	—	
I.D. NUMBER	21 AKB-22	

SI-SIE-79A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801100

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

Bioengineering Aspects of Air Pollution

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Friedlander, Sheldon, K., 064-20-8792, Professor of Chemical Engineering & Environmental Health Engineering

Wang, Chiu-s., 509-46-6539, Research Fellow, Department of Chemical Engineering

NAME AND ADDRESS OF APPLICANT ORGANIZATION

California Institute of Technology
1201 East California Blvd.
Pasadena, California 91109

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

Over the past twelve years, the principal investigator and his students have carried on research in the fields of aerosol physics and interfacial transfer, with particular reference to the air pollution field. This research, which has been both experimental and theoretical in nature, has led to new concepts concerning the particle size distribution of disperse systems, new methods of predicting the efficiency of filtration of particles from fluids and methods of calculating rates of gas exchange with blood. We propose to continue research in aerosol physics and interfacial transfer, investigating in particular problems related to pulmonary function and to the filtration of particles from gases. Three such problems discussed in the proposal are (1) the transition from the diffusional regime to the inertial regime in aerosol deposition from flowing gases, (2) the theory of diffusion in an oscillatory flow (with application to lung models), and (3) diffusion through monocellular layers at interfaces.

The application of modern concepts of particle and gas transfer will, we believe, lead to improved methods of estimating exchange rates in the lung. This in turn will better our understanding of the physiological effects of atmospheric contaminants, the transmission of air-borne disease, the administration of aerosol therapy and the design of artificial lungs. In addition, our research program will lead to improvements in the theory of aerosol filtration as well as dust washout in the atmosphere and by industrial scrubbers and other gas cleaning devices.

LEAVE BLANK-DO NOT WRITE BELOW THIS LINE

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 1-1-68 3-31-73
BUDGET PERIOD 4-1-72 3-31-73
ANNUAL EFFORT $54,500
MULTIPLE FUNDING —
I.D. NUMBER 21 AKB-24

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Design and Fabrication of a Prototype Instrument for Sizing Atmospheric Giant Particles (EPA Contract No. 68-02-0661)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Frederick M. Shofner, Project Director
Dr. Jack L. Durham, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:
Environmental Systems Corporation
Knoxville, Tennessee

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Environmental Systems Corporation has contracted to furnish the Division of Chemistry and Physics an instrument with the following characteristics: (a) The principle of detection minimizes the effect of index of refraction for particle diameters in the range 5 to 100 microns. (b) Every particle passing through the field of view yields a response, which is processed by a pulse height analyzer. (c) The monitor is capable of being operated continuously, year-round, outdoors.

The technique employed is the measurement of the intensity of near-forward light scattered by aerosol particles.

Period of Performance: 6/30/72 - 12/29/72

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
X CONTRACT 68-02-0661
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Jack L. Durham

~~PROFESSIONAL SCHOOL~~ (medical, graduate, etc.) Environmental Protection Agency, NERC
Research Triangle Park, N.C. 27711

A. 6/72-12/72
B. $24,013
C. --
D. Fiscal Year 1972 Program (Related to Tasks 4 and 13, ROAP 21 21 AKB)

SI-SIE-7bA; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Fabricate Trace Gas Monitoring System

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Ronald K. Patterson Project Officer, Division of Chemistry and Physics, EPA	Mr. Jerry Wyntjes Project Director Block Engineering, Inc.

NAME AND ADDRESS OF INSTITUTION:

Block Engineering, Inc., 19 Blackstone Street
Cambridge, Massachusetts 02139

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this contract is to obtain a mobile, trace gas monitoring system based on Fourier Transform Infrared Spectroscopy for use in field studies (California Aerosol Characterization Study - 1972; Regional Air Pollution Study, St. Louis - 1973 and 1974); in laboratory studies of infrared absorption and emission of aerosols; and monitoring the Branch's very large (30 ft long) smog chamber. The contractor will fabricate, demonstrate, and deliver a Fourier Transform Infrared Spectroscopic system for analysis of trace gases, demonstrate system in a laboratory site in Los Angeles, and install the system in an Environmental Protection Agency mobile laboratory. System will consist of the following components: Interferometer, source and detectors, data system, long path cell, gas handling equipment. Specific and sensitive analytical methods exist for a number of the more common pollutants. However, there are a number of important pollutants for which sensitive, specific, and near real time measurement techniques have not previously been available. These include aerosol precursors, oxygenated organic compounds, and oxidants, e.g.; NH_3, HNO_3, H_2CO, HCOOH, RCHO, RCOOH, H_2O_2, PAN's, HNO_2, and possibly other species. Recent advances in instrumentation have led to the development of Fourier Transform Spectroscopy. Work under laboratory conditions has shown that this technique can be used for analysis at ppb concentration levels of NH_3, HNO_3, H_2CO, HCOOH, H_2O_2 in the presence of other air pollutants and water vapor. Pollutants such as CO, CH_4, NO, NO_2, SO_2, and O_3 can also be determined although other techniques are available for these. It is reasonable to suppose that other air pollutants can also be measured by this technique. This kind of system is needed as part of the Chemistry and Physics Branch mobile laboratory for field studies.

Period of Performance: 6/29/72 - 4/28/73

ETHOD OF SUPPORT (CHECK ONE)

- ☐ INTRAMURAL
- ☒ CONTRACT 68-02-0572
- ☐ GRANT
- ☐ INTERAGENCY AGREEMENT
- ☐ OTHER

William E. Wilson Jr.
for

SIGNATURE OF PRINCIPAL INVESTIGATOR: Ronald K. Patterson

~~PROFESSIONAL SCHOOL~~ (medical, graduate, etc.): Environmental Protection Agency, NERC Research Triangle Park, North Carolina

A. 6/72-4/73
B. $162,928
C. --
D. Fiscal Year 1972 Program (Related to Task 13, ROAP 21 AKB)

SI-SIE-7BA; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Design and Fabrication of a Trailer-Van Laboratory Shell

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Gilmore Sem, Project Director
Dr. Jack L. Durham, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Thermo-Systems, Inc.
St. Paul, Minnesota

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Thermo-Systems, Inc. will supply the Division of Chemistry and Physics with a heavy-duty trailer-van constructed for use as an aerosol laboratory facility. Specific detail will be given to meeting restrictive building codes (those of California), the National Electrical Code, and ICC regulations.

Period of Performance: 8/24/72 - 4/23/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT 68-02-0654
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Jack L. Durham

~~PROFESSIONAL SCHOOL~~ (medical, graduate, etc.) Environmental Protection Agency, NERC
Research Triangle Park, N.C. 27711

A. 8/72-4/73
B. $54,529
C. --
D. Fiscal Year 1972 Program (Related to Task 17, ROAP 21 AKB)

SI-SIE-7aA; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800695

SUPPORTING AGENCY: Environmental Protection Agency

ABBREVIATED TITLE OF PROJECT

Physical Chemical Studies of Aerosols

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT

Milton Kerker	11[illegible]-03-7331	Dean of Arts and Sciences and Professor of Chemistry, Chemistry Department
Egon Matijević	10[illegible]-32-4554	Professor of Chemistry, Chemistry Department
Donald Monk	22[illegible]-46-3141	Research Associate, Chemistry Department
Chao-ming Huang	509-46-6427	Teaching Assistant, Chemistry Department

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Clarkson College of Technology
Potsdam, New York 13676

USE THIS SPACE TO MAKE A BROAD STATEMENT OF YOUR RESEARCH OBJECTIVES

This project has been concerned with the (1) preparation, (2) characterization by light scattering, and (3) physical chemical studies of laboratory aerosols. It is felt that the knowledge and experience gained with such controlled systems will provide necessary know-how for handling the more complicated field situations.

The first five years of work have been devoted to (1) and (2), and although many "odds and ends" remain, we now have successful techniques for preparing aerosols consisting of either solid or liquid spheres of a variety of materials having a narrow distribution of particle sizes.

The present goals are to carry out quantitative studies of such phenomena as (1) coagulation, (2) growth by vapor phase condensation, (3) evaporation, (4) growth by accretion, and (5) chemical reaction. In the first case, one of the obvious problems is to observe the detailed change in particle size distribution with time in order to determine whether Smoluchowski coagulation kinetics is followed and to what extent the theoretical predictions of workers such as Friedlander and Hidy are borne out. In the second case, one of the things to learn is the rate of growth of aerosol particle in a supersaturated atmosphere and the dependence of growth upon particle size. The third case is the inverse problem. The fourth is the special case of coagulation when a large droplet falls through an aerosol. The last problem deals with the interaction between aerosol droplets of reacting species such as H_2SO_4 and NH_3.

Each of these is a long-range problem. The amount of truly quantitative work which has been done is not great. Work such as that proposed is necessary in order to create an aerosol science.

LEAVE BLANK DO NOT WRITE BELOW THIS LINE

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 4/1/68 3/31/73
BUDGET PERIOD 4/1/72 3/31/73
ANNUAL EFFORT $37,298
MULTIPLE FUNDING
I.D. NUMBER 21 AKB (No task assigned; FY 72 funded)

SI-SIE-76 A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800833

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Rutgers-The State University, New Brunswick, New Jersey

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Daniel Lillian, 099-32-5778, Assistant Professor, Department of Environmental Sciences,
Rutgers University, New Brunswick, N. J.

Alan Appleby, 103-38-6347, Associate Professor, Department of Environmental Sciences,
Rutgers University, New Brunswick, N. J.

A. Joel Kaplovsky, 158-10-9317, Professor & Department Chairman, Department of
Environmental Sciences, Rutgers University, New Brunswick, N.

TITLE OF PROJECT

Atmospheric Freons and Halogenated Hydrocarbons

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The fates of atmospheric Freons, halogenated hydrocarbons, SF_6, and other compounds, proposed herein for study are not known. Significant quantities of these materials are emitted to the troposphere, but the 3 ambient measurements available suggest removal mechanisms are operating. Evidence is presented here that stratospheric and tropospheric reactions are responsible for their removal.

The fates of these materials in the troposphere and stratosphere will be assessed. The method of attack will involve three phases viz, (1) a continuing literature search for emissions data and relevant photochemical kinetic information, (2) ambient measurements at 4 locations (urban, rural, Atlantic Ocean and high elevation), (3) laboratory simulations in a test chamber at tropospheric and stratospheric pressures. Ultra-sensitive concentrating techniques, coupled with the best available gas chromatographic equipment will be needed to determine substances in the 10^{-11} to 10^{-12} v/v range. A 60 cubic foot reaction chamber designed to simulate solar intensity and wavelength distribution at zero air mass, and having evacuation capability equivalent to 130 km altitude will be used to supply kinetic data needed to assess postulated removal mechanism. A small-scale, high frequency photochemical reactor will be used to study compounds not degraded at longer wavelengths.

To optimize manpower according to project timetable (Appendix 1) we have scheduled phases (1) and (2) to be initiated in the first year to emphasize Freons, and to continue through years two and three to include other materials. Also in the first year, the 60 ft^3 chamber will be constructed for tropospheric simulation experiments, (phase 3). This chamber will be upgraded the second year to allow stratospheric as well as tropospheric studies in the second and third years of the project.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-9-72 6-8-75

BUDGET PERIOD 6-9-72 6-8-73

ANNUAL EFFORT $53,606

MULTIPLE FUNDING —

I.D. NUMBER 21 AKC-4

348

SI-SIE-73A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: SO_2 Oxidation and Removal in Polluted Atmospheres

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Marijon Bufalini, Research Chemist
Atmospheric Aerosol Research Section
Atmospheric Chemistry and Physics Branch
Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this program is to study the transformation and removal mechanisms of SO_2 in polluted atmospheres. Mixtures of SO_2, nitrogen oxides, and hydrocarbons are irradiated in a 424-liter glass simulated-environmental chamber. The formation of photochemical aerosols will be studied as a function of type of hydrocarbon, reactant concentrations, hydrocarbon to nitrogen oxide ratio, relative humidity, light intensity and presence of nucleating centers.

Project initiated 7/72; anticipated completion date 7/77

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Marijon Bufalini

~~PROFESSIONAL SCHOOL~~ (medical, graduate, etc.) Environmental Protection Agency, NERC
Research Triangle Park, N.C. 27711

A. 7/72-6/73
B. $28,000
C. --
D. 21 AKC - Task 6

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

CHEMISTRY OF REACTING POLLUTED AIR UNDER CONTINUING INFLUX OF REACTANT

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Joseph J. Bufalini, Mr. Stanley L. Kopczynski, and Mr. Richard Kuntz

Division of Chemistry and Physics, Atmospheric Chemistry and Physics Branch

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, N. C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Most smog type studies carried out in large irradiation chambers are unrealistic. The chamber is usually initially charged with the reaction mixtures, the lights turned on and the reactant and products followed. Other studies involve the continuous influx of reactants at constant levels and the reactor achieves equilibrium when steady state is reached for reactant and products. However, the real atmosphere is neither of these. There is usually a large initial influx due to the morning traffic and then a small steady influx from the average daily traffic. The solar intensity and temperature also change with both increasing during the morning.

This study will involve the use of a large irradiation chamber operated in a manner to simulate actual atmospheric conditions (meteorology excluded). Hydrocarbons and NO_x will be placed in the chamber as an initial stay and then decreased as the light intensity and temperature are increased. NO_2 dosage, oxidant formation, hydrocarbon products and reactant products will be monitored during the irradiation.

This work will be delayed until a large chamber is available. Probable start date is January 1973. Anticipated completion date is June 1975.

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J J Bufalini

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $28,000
C. N/A
D. ROAP 21 AKC , Task 8

SI-SIE-79A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Measure Atmospheric Contaminants at Selected Locations in the St. Louis Area for Guidance in Monitoring Site Selection

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Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

William A. Lonneman, Health Services Officer
Stanley ~~L.~~ Kopczynski, Research Chemist
Theodore Winfield, Research Chemist
Richard Kuntz, Research Chemist
Gas Photochemistry and Kinetics Section
Atmospheric Chemistry and Physics Branch, Division of Chemistry and Physics

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NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Field studies were undertaken in the summer of 1972 in order to characterize the atmospheric pollutants in the St. Louis area. These pollutants include the C_1-C_{10} hydrocarbons, PAN, oxygenates, NO_x, SO_2, NH_3, HNO_3, H_2O_2 and particulates. Classical gas chromatographic methods and wet chemical methods are employed, as well as the new chemiluminescent and Fourier Transform Spectroscopy (FTS) methods, for pollutant measurements. Irradiations will also be conducted with large Teflon bags containing trapped air samples from the area. CO and C_2H_2 measurements will be taken upwind and downwind from the city to note pollutant trajectories.

The project began in August, 1972 and will be completed by June, 1973. Recommendations to the RAPS program will be made by November, 1972.

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

Joseph Bufalini

SIGNATURE OF PRINCIPAL INVESTIGATOR Stanley Kopczynski

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $158,000
C. N/A
D. ROAP 56 AA1, Task 2

SI-SIE-79A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Coordinate the St. Louis Aerosol Characterization Program

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. William Wilson, Jr., Research Chemist
Dr~~. Jack L~~. Durham, Research Chemist
Dr. Marijon Bufalini, Research Chemist
Mr. Ronald Patterson, Research Chemist
Atmospheric Aerosol Research Section
Atmospheric Chemistry and Physics Branch, Division of Chemistry and Physics

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A program to characterize St. Louis aerosols will be conducted as part of the Regional Air Pollution Study. Size distribution, chemical composition, and distribution of aerosols in time and space will be determined. Relationships between aerosol loading and visibility will be developed. The project under discussion will coordinate all of the effort involved in characterizing the St. Louis aerosol.

Since this task is involved with coordinating research grants and contracts, its period of duration will depend upon the length of performance for the various contractors and grantees. This period is usually three years from date awarded (7/72).

ETHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William Wilson

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72-6/73
B. $9,000
C. N/A
D. ROAP 56 AA1, Task 9

SI-SIE-78A; REV. 6-64

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 801119

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Washington
Seattle, Washington 98105

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Alden L. Crittenden	536-36-5251	Associate Professor	Chemistry
Robert J. Charlson	563-48-6429	Associate Professor	Civil Engineering
Dennis Schuetzle	566-56-7727	Post-Doctorate Research Associate	

TITLE OF PROJECT

Analysis of Air Pollutants by Mass Spectroscopy

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

It is proposed to refine and extend the application of a computer-controlled high-resolution mass spectrometer to the determination of the molecular composition of atmospheric aerosols. A system for sampling compatible with mass spectrometers has been developed. Computer control, data acquisition and reduction has been developed including software. Work to date has proven the capability of the entire system for the simultaneous determination of up to 100 components, inorganic and organic, in particulates. Limited field experiments in Denver, Los Angeles, and Seattle, have yielded useful preliminary results and demonstrated the utility of the system. Large differences in chemical compositions are apparent.

An extensive field sampling program is necessary for a complete evaluation of the methodology and for studies of aerosol sources and formation. It is proposed to study the chemical composition of aerosols as a function of location, time, meteorological conditions, and particle size. Future sampling will be concurrent with the 1972 Los Angeles and 1973-74 St. Louis joint experiments.

Since the present computer must be shared with other active and growing projects in the chemistry department, there is much more mass spectrometer time available than computer time. A second small dedicated computer would permit a much higher level of activity. Modifications in software are expected to reduce the time per sample for analysis from about 5 hours to 1 or 2 hours.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-15-72 6-14-75
BUDGET PERIOD 6-15-72 6-14-73
ANNUAL EFFORT $79,908
MULTIPLE FUNDING
I.D. NUMBER 56AA1-12

353

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800665

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Washington
Seattle, Washington 98105

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED [illegible] BEGINNING WITH PRINCIPAL INVESTIGATOR

Robert J. Charlson	563-48-6429	Associate Professor of Atmospheric Chemistry
Norman C. Ahlquist	539-44-9927	Engineering Assistant
Alan P. Waggoner	535-38-5103	Research Associate
Chin-I Lin	None	Pre-doctoral Associate
August T. Rossano, Jr.	014-18-4813	Professor

TITLE OF PROJECT

Influence of Aerosol Characteristics on Visibility (RG)

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

We propose to continue this research project, concerned with the effects of atmospheric aerosols and their properties on visibility, by investigating several directly related areas. Activities to date include the development of the integrating nephelometer, and studies with it related to mass concentration, wavelength dependence of light scattering, spatial distribution of aerosol and humidity dependence of visibility. Since this last area has only been examined briefly, and because it depends on a better knowledge of aerosol chemistry, it will be studied much more extensively.

The role of the chemical composition of aerosols to their physical and optical response to increased humidity remains as an important and relatively unexplored problem. Preliminary work has shown that the nephelometer can be used for in situ studies at humidities approaching 100%. Field experiments at the sea-shore and at Pasadena have shown interesting but, as yet, unexplained effects at high (70-90%) and low (20-40%) RH respectively. The main thrust of the proposed renewal will be to examine the inter-relationships of the three basic variables: 1) the amount, composition and size distribution of particulate matter, 2) humidity, 3) optical properties. In order to do this, it will be necessary to develop techniques for determining the necessary chemical properties. It is also desireable to continue to study methods for evaluation of the appropriate optical quantities. Extensive field experiments are envisaged in keeping with our approach in the past, including joint experiments with the Whitby team.

The past three years of research have had practical significance based on both scientific and technical results. An integrating nephelometer based on our drawings is being manufactured and used widely in both research and monitoring of visibility degradation. Perhaps more significance should be attached to the use of the (mass)·(visual range) product as the basis of Chapter 3 of "Air Quality Criteria for Particulate Matter." The proposed research should have the same sort of significance. Specifically, criteria relating mass concentration and visibility as a function of composition and humidity can be anticipated.

LEAVE BLANK

METHOD OF SUPPORT: ☐ INTRAMURAL ☐ CONTRACT ☑ GRANT ☐ INTERAGENCY ☐ OTHER

PROJECT PERIOD 4-1-71 5-31-74
BUDGET PERIOD 6-1-72 5-31-73
ANNUAL EFFORT $68,234
MULTIPLE FUNDING —
I.D. NUMBER 56AA1-13

SI-SIE-7bA; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO. 800834

SUPPORTING AGENCY: Environmental Protection Agency

NAME AND ADDRESS OF APPLICANT ORGANIZATION

ZAROMB RESEARCH FOUNDATION, 376 MONROE STREET, PASSAIC, NEW JERSEY 07055

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

SOLOMON ZAROMB, 063-24-7505, DIRECTOR
J. FRANCISCO AVELLANET, 261-74-8482, RESEARCH ENGINEER
FRANCISCO QUINTANA, 266-27-3270, TECHNICAL ASSOCIATE

TITLE OF PROJECT

FIELD EVALUATION OF A MOBILE REMOTE SENSING SYSTEM

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

A program is proposed to:

1. perform a thorough field evaluation of the remote sensing performance of an existing mobile lidar spectroscopic system developed under Grant No. R01 AP 00516; and
2. demonstrate the feasibility of:
    a) determining the three-dimensional distributions of SO_2 in urban atmospheres; and
    b) tracking and connecting cloud-borne pollutants with their sources.

The proposed sensing procedure is based on a combination of absorption- and Raman-spectroscopic techniques.

LEAVE BLANK

METHOD OF SUPPORT: ___ INTRAMURAL ___ CONTRACT ✓ GRANT ___ INTERAGENCY ___ OTHER

PROJECT PERIOD 6-15-72 6-14-73
BUDGET PERIOD 6-15-72 6-14-73
ANNUAL EFFORT $ 24,999
MULTIPLE FUNDING
I.D. NUMBER 56 AAI (No task assigned; FY 72 funded) 355

SI-SIE-38A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of a Methodology for the Assessment of the Effects of Fuels and Additives on Control Devices .

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. O. J. Manary, Project Director, The Dow Chemical Company

Mr. John E. Sigsby, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

The Dow Chemical Company,

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The contractor will develop a method or methods which shall be designed to permit the accurate assessment of the effect of the combustion products from gasoline motor vehicle fuels and such fuels with additives on emissions control devices on the following general types:

A. Current year vehicle system
B. Manifold reactors
C. Oxidation catalysts
D. Reduction catalysts
E. Exhaust Gas Recirculation (EGR) System

If the contractor considers that no current technology exists which may be applicable to this objective, he will provide a suggested program to arrive at these objectives.

The contractor will direct his efforts toward the development of methodology related to the specific systems noted above and shall apply his studies to light-duty motor vehicles (under 6000 pounds GVW) fueled with motor vehicle gasoline, non-leaded and low lead (0.5 gm Pb/gal). Evaluation of effects on existing current year vehicle emission control systems will be conducted considering the systems as a unit, not by individual component.

Period of Performance: 6-30-72 - 7-29-73

METHOD OF SUPPORT (CHECK ONE)

_ INTRAMURAL
_ CONTRACT 68-02-0581
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

A. 6/72 - 7/73
B. $111,116
C. N/A
D. ROAP 26AAE **FY 72 Funded**

SI-SIE-78A; REV. 6-64

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Development of a Predictive Model for Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. R. V. Petrella, Technical Manager, Contracts Projects Laboratory
Dr. Ronald L. Bradow, Project Officer, Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

The Dow Chemical Company, Midland, Michigan

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective of project is to apply kinetic spectroscopy techniques to the evaluation of fuel and fuel additive effects on engine combustion chamber chemical species, and to establish the relationship between these "hot" species and the composition of gaseous and particulate emissions.

Period of Performance: 6/30/72 - 7/29/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
_x_ CONTRACT* 68-02-0582
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 6/72 to 6/73
B. $96,897
C. N.A.
D. ROAP 26AAE, Task II

SI-SIE-16A, REV 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Determination of Effect on Particulate Exhaust Emissions of Additives and Impurities in Gasoline

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Mr. Michael Baldwin, Project Director
Dow Chemical Company

Mr. John Sigsby, Project Officer
Division of Chemistry and Physics, EPA

NAME AND ADDRESS OF INSTITUTION:

Dow Chemical Company, Midland, Michigan 48640

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Under the Clean Air Act, as amended, the Administrator of EPA is authorized to register motor vehicle fuels and fuel additives, and to regulate the manufacture and sale of any fuels and fuel additives, the emission products of which will endanger public health and welfare or significantly impair the performance of emission control devices.

The development of techniques for measuring and monitoring the emissions which may cause these adverse effects is essential to the proper implementation of this authority. The objective of this procurement is the development of techniques for measuring those characteristics of the particulate portion of such emissions which are postulated to have significant adverse effects.

The Contractor shall conduct tests and investigations to determine the effect on particulate exhause emissions of additives and impurities in gasoline. Tasks to be completed will include selection of characteristics to be measured, selection of characterization procedures, and testing of candidate procedures and evaluation of effects of fuel additives.

Period of performance: December 20, 1971 - December 19, 1972

METHOD OF SUPPORT (CHECK ONE)
☐ INTRAMURAL
☒ CONTRACT 68-02-0332
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 12/71 - 12/72
B. $126,035
C. N/A.
D. ROAP 26 AAE FY 72 Funded

DIVISION OF METEOROLOGY

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Development of METRAC system for use in RAPS

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. A.D. Belmont

NAME AND ADDRESS OF INSTITUTION:
Control Data Corporation, Meteorology Department
8100 34th Avenue, South
Minneapolis, Minnesota 55420

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Receiver and converter sets suitable for use in a full-scale network of the METRAC system will be constructed, and the system operated at the Idaho Falls Field Research Office, ARL, NOAA, in conjunction with simultaneous radar tracking of a number of horizontal balloon flights. Data will be analyzed to obtain the balloon positions and velocities by remote computer, and these results compared to the radar tracking data. If these field tests are successful as expected, a follow-on stage of designing, construction, and installing a complete system, with local computer, for use in the St. Louis area will be undertaken. The first study is expected to begin in October, 1972, and be completed in August, 1973.

METHOD OF SUPPORT (CHECK ONE)

___INTRAMURAL
_X_CONTRACT
___GRANT
___INTERAGENCY AGREEMENT
___OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL
(medical, graduate, etc.)

A. 7/1/72 - 6/30/73
B. $225,000
C. NA
D. 26AAI 1A1003 17

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Geophysical Characteristics and Energy Budget of the Urban Surface

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Walter F. Dabberdt
Dr. Paul A. Davis

NAME AND ADDRESS OF INSTITUTION:
Stanford Research Institute
Menlo Park, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

During suitable periods of weather, aircraft flights will be made over selected flight paths which will be representative of the rural and urban surfaces of the St. Louis region. Reflected solar radiation will be measured with a downward facing pyranometer to measure the albedo of the various surfaces, by comparing the reflected radiation with incoming direct and diffuse solar radiation measured at a rural and an urban site. Infared surface temperature will be measured during both day and night to determine the thermal response of the surface to the diurnal pattern of incoming radiation. A preliminary classification of the underlying surfaces according to its physical characteristics - type and variety of materials, and geometry with particular reference to shadowing of surfaces - will be made and related to the aircraft measurements. This work is a feasibility study to determine if results from the selected paths can be successfully analyzed; if so, more extensive mapping flights should then be incorporated into the total energy budget studies planned for the St. Louis Regional Air Pollution Study. Field measurements will be made in August 1972, with reporting of the results in December 1972.

METHOD OF SUPPORT (CHECK ONE)

___INTRAMURAL

_X_CONTRACT

___GRANT

___INTERAGENCY AGREEMENT

___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/1/72 - 6/30/73
B. $60,000 (27,000 contract with SRI)
C. NA
D. 26AAI 1A1003 16

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Sampler development for gaseous tracers

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

to be solicited

NAME AND ADDRESS OF INSTITUTION:

to be solicited

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Using recently developed gas chromatographic techniques, a number of candidate gasses for use in tracer studies can be reliably and quantitatively measured at atmospheric concentrations of one part in 10^{14} to 10^{15}. The methods presently used to collect atmospheric samplers are unsuitable for quantitative atmospheric studies, in that bulky and/or heavy containers are required to collect samples which can then be transported to a central facility for analysis. This project will investigate concentrating methods that might be suitable for use in field samplers, and determine the quantitative stability of such methods under different ambient conditions which might be encountered in field tracer operations, leading to the development of field sampling hardware. This project is expected to begin in November 1972, with the methods investigations completed in September 1973.

METHOD OF SUPPORT (CHECK ONE)

___INTRAMURAL

_X_CONTRACT

___GRANT

___INTERAGENCY AGREEMENT

___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

A. 7/1/72 - 6/30/73
B. $90,000
C. NA
D. 26AAI 1A1003 18

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NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Support of Atmospheric Turbidity Network

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Edwin C. Flowers - Research Meteorologist - Division of Meteorology

NAME AND ADDRESS OF INSTITUTION:

Division of Meteorology - National Environmental Research Center
Environmental Protection Agency - Research Triangle Park, NC 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Atmospheric turbidity is a measure of the extinction of light due largely to scattering with perhaps some lesser contribution from absorption by aerosols. Measurements are normalized to a vertical path through the atmosphere. Turbidity measurements by sunphotometer are now being made at 78 stations throughout the world. Fifty-two of the stations measure turbidity at wavelengths of 0.38 and 0.50 micrometers while the remaining 26 stations measure only at 0.50 micrometers.

The purpose of the project is to monitor atmospheric turbidity in the U.S. as well as world wide to determine background values, seasonal, and geographical variations, and expecially to expose any long term trends. The data are published every four months by the National Climatic Center in Asheville, North Carolina. Instruments are supplied, calibrated, and maintained by the Division of Meteorology.

The project was started in 1960 with about 10 U.S. stations. It grew to about 40 stations by 1965, and in 1971-1972, the remainder of the stations, mostly foreign, were activated. The idea of an international turbidity network is supported by the World Meteorological Organization. The project is expected to continue for several years.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL

___CONTRACT

___GRANT

___INTERAGENCY AGREEMENT

___OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) Edwin C. Flowers, NOAA

A. 7/1/72 - 6/30/73
B. $10,000
C. NA
D. 26AAS 1A1009 12

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Inter-regional Transport of Air Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

John F. Clarke - Research Meteorologist - Division of Meteorology

NAME AND ADDRESS OF INSTITUTION:

Division of Meteorology - National Environmental Research Center
Environmental Protection Agency - Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study is concerned with the significant transport of air pollutants over distances of several hundred to several thousand kilometers. Metal fractions of National Air Sampling Network data are used as tracers. The origin of the particulate is determined by low-level trajectories and the data are statistically analyzed to evaluate the importance of long distance transport relative to meteorological and source conditions. Low-level trajectories will also be used to determine the regional pollution burden of specific large sources such as a large city and the Four Corners power plant. The results will generally be presented as a climatalogical summary of frequency of 24- to 48-hour trajectory terminal points in designated areas. However, specific cases are considered individually (e.g., the May 1972 incident involving pollution transport to Miami from the Midwest). The project was started in March 1972 and is expected to be completed in December 1973.

METHOD OF SUPPORT (CHECK ONE)

_X_ INTRAMURAL
___CONTRACT
___GRANT
___INTERAGENCY AGREEMENT
___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________
John F. Clarke, NOAA

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

A. 7/1/72 - 6/30/73
B. $10,000
C. NA
D. 26AAS 1A1009 22

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY:

TITLE OF PROJECT: Precipitation Scavenging Model Development (Field Measurement and Analysis of Precipitation Scavenging of SO_2, NO_x, Sulphates, Nitrates, and Hydrogen Ions from Coal-Fired Power Plants and Metropolitan Sources).

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Jeremy B. Hales

NAME AND ADDRESS OF INSTITUTION:

Battelle, Pacific Northwest Laboratories
Battelle Boulevard, Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

An investigation will be undertaken to determine the fate of sulfur and nitrogen oxides emanating from the St. Louis urban area which are incorporated into convective precipitation systems. Aircraft flights will be made through the updraft region of developing convection clouds to measure gaseous and particulate concentrations of airborne SO_x and NO_x compounds, and rainwater samples will be collected and immediately frozen at a limited number of upwind sites, and two arcs of downwind sites to determine the concentration in the rainwater of these same species. Field sampling will be conducted in conjunction with the METROMEX experiments in August, 1972, with analyses of results reported by May, 1973.

METHOD OF SUPPORT (CHECK ONE)

___INTRAMURAL
___CONTRACT
___GRANT
_X_INTERAGENCY AGREEMENT
___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______________

A. 7/1/72 - 6/30/-3
B. $80,000
C. NA
D. 26AAI 1A1003 21

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Urban Energy Budget Study

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

James T. Peterson
Edwin C. Flowers
Research Meteorologists
Division of Meteorology
National Environmental Research Center, EPA

NAME AND ADDRESS OF INSTITUTION:

Division of Meteorology
National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, N. C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

One aspect of the Regional Air Pollution Study is to investigate the energy budget of metropolitan St. Louis; urban-rural differences in the energy budget, and how these urban-rural differences affect the weather and climate of the area. This project is aimed at quantitatively describing the variation of incident solar (0.3 to 3.0 micrometers wavelength) and terrestial (3.0 to 50.0 micrometers) radiation throughout the metropolitan area. Thus, this project is currently the first step in the determination of the total energy budget. Actual measurements under this project began in the summer of 1972 with a pilot program at two sites: downtown St. Louis and a rural location 30 miles to the southwest. At each site the following were measured: incident global solar energy in three wavebands (ultraviolet, visible, and infrared), incident direct solar radiation in the same wavebands, incident global terrestial radiation, atmospheric turbidity at 0.38 and 0.5 micrometers, atmospheric particle concentrations as indicated by nephelometer, high volume filter sampler and paper tape sampler, and air temperature and humidity. Analyses of the data will focus on urban-rural differences and the reasons for these differences. During the coming year an instrument package for aircraft measurements of most of the parameters listed above will be tested. This will permit extension of the St. Louis energy studies into the third dimension during and after 1973. This project was first conceived in August, 1971 and is expected to continue through 1976.

METHOD OF SUPPORT (CHECK ONE)

____INTRAMURAL
____CONTRACT
____GRANT
____INTERAGENCY AGREEMENT
____OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/1/72 - 6/30/73
B. $20,000
C. Inhouse $20,000; Contracts to be negotiated, $60,000
D. 26AAI 1A1003 16

SI-SIE-79A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency, National Environmental Res. Center, DMT Research Triangle Park, N. C. 27711

TITLE OF PROJECT: Development of Modeling Technique for Photochemical Air Pollution

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Lynn H. Teuscher - principal investigator

NAME AND ADDRESS OF INSTITUTION:

Systems, Science and Software, P. O. Box 1620, La Jolla, California 92037

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In an earlier contract a new technique for the solution of the atmospheric diffusion equation (K-theory) was developed and applied to some air pollution problems. This technique, called PICK, is based on the use of Lagrangian mass points and is one of a family of particle-in-cell techniques for the solution of the partial differential equations of hydrodynamics. The method can be applied to the determination of the three-dimensional field of pollution concentration resulting from an arbitrary distribution of sources and with arbitrary three-dimensional fields of wind velocity and eddy diffusivity. The PICK method is now being appropriately modified so as to permit the incorporation of photochemical air pollution kinetics in a three-dimensional Lagrangian rather than an Eulerian framework. This work was initiated in June 72 and should be completed by Dec. 72.

METHOD OF SUPPORT (CHECK ONE)
____INTRAMURAL
XXX CONTRACT
____GRANT
____INTERAGENCY AGREEMENT
____OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

A. 6/1/72 - 1/31/73
B. Funded with FY72 Monies
C. NA
D. 21AD0 1A1009 05

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency, National Env. Res. Ctr. DMT.
Research Triangle Park, N. C. 27711

TITLE OF PROJECT:

Select Group in Air Pollution Meteorology

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Alfred K. Blackadar & Dr. William J. Moroz - principal investigators

NAME AND ADDRESS OF INSTITUTION:
The Pennsylvania State University
University Park, Pennsylvania 16802

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is the objective of the proposed program to establish a Select Research Group at the Pennsylvania State University in the area of meteorology within the Department of Meteorology and the Center for Air Environment Studies. The purpose of the Group is to provide the capability for developing a coordinated attack on basic long-range problems associated with atmospheric processes relating to air pollution. Work will be conducted in four main areas that will include numerical simulation modeling of atmospheric transport and diffusion, the atmospheric effects of air pollutants and particularly of aerosol particles, atmospheric removal processes for air pollutants and the rate of pollution removal due to interaction with the earth's surface, and development of facilities such as the PSU aircraft for use in air pollution field measurements. This project was started in June 72 and may continue for five years.

METHOD OF SUPPORT (CHECK ONE)
____INTRAMURAL
____CONTRACT
XX GRANT
____INTERAGENCY AGREEMENT
____OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 5/1/72 - 4/30/77
B. $300,000
C. NA
D. 21AD0 1A1009 14

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency, National Env. Res. Ctr., DMT Res. Tri. Pk., N. C. 27711

TITLE OF PROJECT: Invariant Modeling of Atmospheric Turbulence and Diffusion

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Coleman du P. Donaldson & Dr. Glenn R. Hilst - principal investigators.

NAME AND ADDRESS OF INSTITUTION:

Aeronautical Research Associates of Princeton, Inc.
50 Washington Road
Princeton, New Jersey 08540

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Invariant modeling provides a new closure scheme for the Navier-Stokes equations in turbulent fluid motion. The success of this technique in predicting the structure of turbulence in a variety of classical shear flows has suggested important applications for atmospheric turbulence and diffusion. Initial tests for an atmospheric situation were made for an infinite cross-wind line source of matter in the thermally stratified lower layer of the atmosphere. Using only the mean wind and temperature profiles for the atmosphere and a predetermined scale length, the vertical dispersion of a pollutant release has been predicted within a factor of two of observed values out to distances of about two miles. The study is currently being extended to permit analysis of diffusion in an unstable surface atmospheric layer that is capped by a temperature diffusion in three spatial dimensions from a point source is being considered together with diffusion in the Ekman spiral of the planetary boundary layer. The method of invariant modeling is also being adapted so as to include within a coupled analytical framework chemical reactions in the presence of turbulent mixing. This study will attempt to define atmospheric situations where turbulent mixing significantly affects the rate of loss of primary photochemical pollutants and the rate of production of secondary ones.

This project was started in Feb. 71 and will probably be extended beyond the present termination data of Jan 73.

METHOD OF SUPPORT (CHECK ONE)
____INTRAMURAL
XX CONTRACT
____GRANT
____INTERAGENCY AGREEMENT
____OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________

A. 2/1/71 - 6/30/73
B. $50,000
C. NA
D. 21AD0 1A1009 22

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency, Nat. Env. Res. Ctr. DMT
Research Triangle Park, N. C. 27711

TITLE OF PROJECT:
Numerical Models for the Simulation of Meteorological and Pollutant Fields in an Urban Boundary Layer

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. P. Pandolfo - principal investigator

NAME AND ADDRESS OF INSTITUTION:
The Center for the Environment and Man, Inc.
275 Windsor Street
Hartford, Connecticut 06120

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The feasibility of developing a mathematical-physical model of the urban boundary layer that will permit prediction of its wind, temperature, turbulence and pollutant structure is being investigated. Most multiple source urban diffusion models developed in the past require that the diffusion be specified a priori as a function of the meteorological conditions that are input for the model. The CEM model integrates in three dimensions K-theory forms of the conservatism equations for momentum, heat and atmospheric water content, in addition to the pollutant conservation equations. It incorporates formulas relating the coefficients of turbulent transfer in the vertical to the wind and temperature fields. Therefore it is capable of generating wind and diffusivity fields that are physically derived and consistent in spatial and temporal scale with the pollutant fields obtained. The model is currently being modified to include a terrain factor that may be used to calculate topographically induced vertical velocities and topographically modified values of the incident solar radiation at the lower atmospheric surface. The modified simulation model will be applied to the prediction of the meteorological and carbon monoxide pollution fields for six selected historical days for the Los Angeles Basin of California. Evaluation of the model will be based on its ability to predict the observed conditions for these days.

This is a continuing research project that was initiated in May 70.

METHODS OF SUPPORT (CHECK ONE)
____ INTRAMURAL
XX CONTRACT
____ GRANT
____ INTERAGENCY AGREEMENT
____ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

A. 5/1/70 - 6/30/73
B. $50,000
C. NA
D. 21AD0 1A1009 19

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Air Pollution Potential Climatology Research

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

George C. Holzworth - Supervisory Research Meteorologist - Division of Meteorology

NAME AND ADDRESS OF INSTITUTION:

Division of Meteorology (ARL) - National Environmental Research Center
Environmental Protection Agency - Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Most large sources (e.g., power plants) inject pollution into the atmosphere at considerable heights above the surface where dispersion characteristics have seldom been adequately documented. Summaries of temperature lapse rate will be developed for several sublayers between the surface and 1500 meters. Wind direction, speed, and humidity statistics will be included. The summaries will be based on five years of National Weather Service upper air observations, which for the most part will be coincident (and complementary) with the data in our recent study (AP-101) on mixing heights and wind speeds.

Inversion characteristics will be published and general applications to the siting of large, single sources will be made, leading ultimately to a siting climatology for the U.S. In addition, relationships between low level lapse rate (stabilities) classes and Pasquill stability classes will be studied.

Description of the basic statistical information and its source will be widely disseminated in order to encourage other applications of the data.

This project began in July 1972 and the tasks described herein are expected to be completed by July 1974.

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR
George C. Holzworth, NOAA

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/1/72 - 6/30/73
B. $10,000
C. NA
D. 26AAS 1A1009 19

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Rainout and Washout of Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Herbert Viebrock - Research Meteorologist - Division of Meteorology

NAME AND ADDRESS OF INSTITUTION:

Division of Meteorology (ARL) - National Environmental Research Center
Environmental Protection Agency - Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Pollutant dispersion models require information on the removal mechanisms. Rainout and washout are two major processes for the removal of atmospheric pollutants. They are relatively efficient processes. This efficiency can have a detrimental side effect. The incorporation of the pollutants into or onto the cloud drop, raindrop, snowflake, or ice crystal changed the chemical composition of precipitation reaching the ground. The resulting "acid rain" can have a toxic biological effect, a detrimental effect on water quality, and a corrosive effect on surface materials. This fiscal year emphasis will be on the evaluation of existing data to locate areas where an "acid rain" problem exists, determination of the magnitude of the problem, and estimation of the possible source area of the pollutants causing the chemical change in the precipitation.

The first two aspects will be studied using basic statistical analyses of the data from the National Precipitation Sampling Network (1959-1964) and such current data as is available from the WMO monitoring network. Possible source area determinations will be based on the statistical anlysis of trajectory families determined for each observation (receptor) point. Available theoretical and experimental rainout and washout models will be used to assist in interpreting the statistical results. This phase of the project will extend from July 1972 to June 1973.

METHOD OF SUPPORT (CHECK ONE)

_X_ INTRAMURAL

___ CONTRACT

___ GRANT

___ INTERAGENCY AGREEMENT

___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________
Herbert Viebrock, NOAA

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

A. 7/1/72 - 6/30/73
B. $10,000
C. NA
D. 26AAS 1A1009 23

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Utilization of Urban Soundings

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Gerard A. DeMarrais - Meteorologist - Division of Meteorology

NAME AND ADDRESS OF INSTITUTION:

Division of Meteorology - National Environmental Research Center
Environmental Protection Agency - Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Balloon-borne soundings of temperature, wind, and humidity are currently made by Environmental Meteorological Support Units (EMSU) in 18 cities. This program is administered by NOAA but supported partly by EPA. The primary purpose for making these urban (or low-level) soundings has been to provide data for operational air pollution weather forecasts. A number of older, low-level sounding stations have now accumulated sufficient data that statistical anaylses can be made. Emissions and observed concentrations of pollutants will be considered in these analyses, through which it is anticipated that a further understanding of the inter-relationships with meteorology will emerge. This understanding would lead to recognition of the limitations of the data, the development of more comprehensive forecasts, and would encourage further utilization of low-level sounding data (e.g., in dispersion models).

The project is a cooperative one with the Division of Meteorology and the EMSU meteorologist working together. It began in July 1972 and will be completed by July 1973.

METHODS OF SUPPORT (CHECK ONE)

X INTRAMURAL
___CONTRACT
___GRANT
___INTERAGENCY AGREEMENT
___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

Gerard A. DeMarrais, NOAA

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/1/72 - 6/30/73
B. $21,000
C. NA
D. 26AAS 1A1009 23

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Forecasting Dispersion Parameters for Atmospheric Stagnation Episodes

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

John F. Clarke - Research Meteorologist - Division of Meteorology

NAME AND ADDRESS OF INSTITUTION:

Division of Meteorology - National Environmental Research Center
Environmental Protection Agency - Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Present numerical models and subjective techniques fail to give satisfactory forecasts of the wind and temperature structure in the boundary layer when wind gradients are weak and undefined, i.e., stagnation conditions. It is with these conditions, however, when pollutant concentrations are normally highest. Forecasts of these parameters are required for urban diffusion models to estimate expected concentrations and specify optimum control strategies.

Statistical techniques will be investigated as a method of specifying the field of input parameters for urban diffusion models, resulting in probability statements of expected concentrations. The study will use historical data from past air pollution potential episodes for investigating large-scale parameters, i.e., mixing heights and wind speeds and RAPS data for investigating the spatial distributions of urban parameters. The study, started in July 1972, will extend through June 1975.

METHOD OF SUPPORT (CHECK ONE)

_X_ INTRAMURAL

____ CONTRACT

____ GRANT

____ INTERAGENCY AGREEMENT

____ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) John F. Clarke, NOAA

A. 7/1/72 - 6/30/73
B. $10,000
C. NA
D. 26AAS 1A1009 22

DIVISION OF ATMOSPHERIC SURVEILLANCE

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Develop and Maintain Referee Analytical Quality Control Laboratory

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Seymour Hochheiser

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency
National Environmental Research Center
Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project deals with developing and maintaining an Analytical Quality Control laboratory. This laboratory will maintain a source of primary reference materials and standards. It will develop systems, procedures and samples suitable for use in interlaboratory and intralaboratory testing for the validation of air pollution measurements. It will develop analytical procedures and validate guidelines for intralaboratory Quality Control procedures. When fully operational, this laboratory will have at its disposal one or more of the best available analytical procedures or instrumentations for the analyses and identification of samples from ambient air and sources.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Measuring of Hazardous Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Robert E. Lee

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Provide analytical support for the measurement of hazardous pollutants in source samples by performing analyses for trace and macro levels of such pollutants in source and supporting samples necessary for the establishment and enforcement of standards. Conduct of investigations leading to the application of existing or new methodology to the analyses of hazardous pollutants in a variety of source and supporting samples.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Measuring Group II and III Source Samples

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Robert E. Lee

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Provision of analytical support for measuring Group II and III source samples in conjunction with activities involving new source performance standards and various industry studies by carrying out:

1. Analyses for trace and macro samples of source and supporting samples for setting/enforcing new source performance standards.

2. Analyses required to support various industry studies.

3. Short-term investigations pertinent to the application of a variety of analytical methods to various source and supporting pollutant samples.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL

___CONTRACT

___GRANT

___INTERAGENCY AGREEMENT

___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Conduct Interlaboratory Tests to Evaluate Performance

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Seymour Hochheiser

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Conduct necessary interlaboratory tests of SO_2, CO and particulates to evaluate the specific performance capabilities of designated participating laboratories.

METHOD OF SUPPORT (CHECK ONE)

_X_ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:
Develop and Produce Test Materials For Use in Intralaboratory and Interlaboratory Quality Control Activities

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Seymour Hochheiser

NAME AND ADDRESS OF INSTITUTION:
Environmental Protection Agency, National Environmental Research Center, Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Initiate development to reference test gas system and produce test materials for CO and particulates.

METHOD OF SUPPORT (CHECK ONE)

___INTRAMURAL
_x_CONTRACT
___GRANT
___INTERAGENCY AGREEMENT
___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Data Program for Method Standardization and Equivalency

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Gerald G. Akland

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, Research
Triangle Park,N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Design and implement programs for auditing and improving the acquisition, processing and utilization of monitoring data in support of activities in standardization and equivalency in the development and operation of a quality control program.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
___CONTRACT
___GRANT
___INTERAGENCY AGREEMENT
___OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Develop Guidelines and Procedures for interlaboratory Quality Control of Pollutant Measurements

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Seymour Hochheiser

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Research and write six documents pertinent to quality control aspects of ambient air measurements. Initiate development of quality control guidelines on source measurements.

METHOD OF SUPPORT (CHECK ONE)

___INTRAMURAL

_x_CONTRACT

___GRANT

___INTERAGENCY AGREEMENT

___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

SI-SIE-76A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Data Program in Area of Technical Assistance

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Gerald G. Akland

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Design and implement programs for auditing and improving the acquisition, processing and utilization of monitoring data in support of activities in the area of technical assistance and support to OAWP, OECG, EOCC, ORM, RO's, state and local agencies, etc. for the analysis of air pollutants and/or the operation of surveillance networks.

METHOD OF SUPPORT (CHECK ONE)

_x_ INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______________________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Coordinate, Evaluate and Provide Technical Assistance to Regional and NERC Quality Control Programs

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Seymour Hochheiser

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Provide assistance, conceptual and some physical tools, consultation and requested evaluations to quality control activities relevant to the air medium.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL

___CONTRACT

___GRANT

___INTERAGENCY AGREEMENT

___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

SI-SIE-78A; REV. 6-64

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY:

TITLE OF PROJECT:

Field Evaluation of Monitoring Techniques

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Franz J. Burmann

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Field evaluation of new and improved commercially available techniques for environmental monitoring to determine salient and long-term operating characteristics under a variety of field conditions (remote, mobile, meteorological, etc.) that affect the performance of the specific measurement technique.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
___CONTRACT
___GRANT
___INTERAGENCY AGREEMENT
___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

SI-SIE-78A; REV. 6-64

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Special Environmental Studies

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Robert E. Lee
Franz J. Burmann
Dr. R. J. Thompson

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center
Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Support special environmental studies such as the Southwest Energy Study (SWES) and the Regional Air Pollution Study (RAPS).

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Technical Assistance to the Office of Enforcement and General Council

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Robert E. Lee

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Provision of technical assistance by both field and in-house sampling and analytical operations to support the OEGC in stationary source enforcement activities as requested.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL

___CONTRACT

___GRANT

___INTERAGENCY AGREEMENT

___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

National Air Surveillance Network (NASN) Operation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Franz J. Burmann

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Environmental Protection Agency, RTP, N.C.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Continued operation of present networks (to include the six Continuous Air Monitoring Program (CAMP) sites and the Durham Air Monitoring and Demonstration Facility) pending assumption of certain such duties by the ten Regional Offices.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Technical Assistance to Regional Offices

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Franz Burmann

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency, National Environmental Research Center, Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Provision of technical assistance and support to the ten Regional Offices to result in their assumption of National Air Surveillance Network (NASN) activities. (sampling and analysis of TSP, NO_2 and SO_2).

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

SI-SIE-70A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY:

TITLE OF PROJECT:

Technical Assistance to OAWP, ORM, EOCC, Regional Offices and other agencies.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Robert E. Lee
Franz J. Burmann
Dr. R. J. Thompson

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency
National Environmental Research Center
Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Provision of technical assistance and support to appropriate Federal, State and local agencies in the form of special sampling and analysis operations. Investigations leading to the application of analytical methodology to couplex pollutant problems and t.e establishment and operation of required networks to obtain data in support of special studies.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
x CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Analysis of Fuels and Fuel Additive Samples

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Robert E. Lee

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency
National Environmental Research Center
Research Triangle Park, N.C. 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Operation of a nationwide network for the collection and analysis of fuel and fuel additive samples. Samples will be derived from consumer sources, refineries, pipelines and manufacturers for in depth chemical and physical analysis. Development or adaption of analytical methodology as required by new samples.

METHOD OF SUPPORT (CHECK ONE)

_x_ INTRAMURAL
_x_ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Develop and Evaluate the Materials For Use in Intralaboratory and Interlaboratory Quality Control Activities

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Seymour Hochheiser

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Evaluate test materials for SO_2, CO and particulates. Develop and evaluate gas delivery system for SO_2.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
___CONTRACT
___GRANT
___INTERAGENCY AGREEMENT
___OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

SI-SIE-78A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Collaborative Testing and Standardization of Ambient Air Reference Method for Ozone

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas - Project Director.

J. H. Margeson, Research Chemist, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Director.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Analytical methods to be used in determining compliance with the national ambient air quality standards are so designated by publication in The Federal Register. For the data obtained by these methods to have legal validity, the limits of reliability, precision and accuracy, must be determined. This is done by conducting a collaborative test(s), and results in standardization of the method.

The work started in 4/72 and is anticipated to be completed 2/73.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

X CONTRACT No. CPA 70-40

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 7/72 - 6/73
B. $23,400
C. N/A
D. ROAP 26AAF Task 05

SI-SIE-[illegible]; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Evaluation of Chemiluminescent Method, Reference Method, for Ozone

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. H. Margeson, Research Chemist, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Director.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Before planning a collaborative test, the method under consideration must be evaluated in the laboratory and the field to determine if the method is sufficiently accurate to justify a collaborative test. This is done by testing the method for interferences. The clarity of the method write-up is also evaluated and revised where necessary.

The work began 4/72 and will be completed 10/72.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL

___ CONTRACT

___ GRANT

___ INTERAGENCY AGREEMENT

___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ___________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ___________

A. 7/72 - 6/73
B. $5,400
C. N/A
D. ROAP 26AAF Task 06

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Collaborative Testing and Standardization of Method for NO_2

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Analytical methods for the accurate determination of NO_2 are presently being developed. This work will result in the selection of a Reference Method for the determination of NO_2 in ambient air. This method will then be subjected to a collaborative test to determine the limits of reliability, accuracy and precision.

It is anticipated that the work will begin 4/73 and be completed 7/73.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
_X_ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

A. 7/72 - 6/73
B. $15,000
C. N/A
D. ROAP 26AAF Task 07

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Evaluation of Methods for Measurement of NO_2 in Ambient Air

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Analytical methods developed for measurement of NO_2 will be evaluated in the laboratory and the field for accuracy and precision to determine whether or not the methods justify a collaborative test. A relative ranking of the reliability of the different methods will also be activated.

It is anticipated that the work will begin 1/73 and be completed 3/73.

METHOD OF SUPPORT (CHECK ONE)

_x_ INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

A. 7/72 - 6/73
B. $11,100
C. N/A
D. ROAP 26AAF Task 08

SI-SIE-7A A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Collaborative Testing and Standardization of Ambient Air Reference Method for Hydrocarbons.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas - Project Director.

J. H. Margeson, Research Chemist, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Director.

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The reference method for measurement of hydrocarbons in ambient air has been designated as gas chromatography. For the data obtained by this method to have legal validity in determining compliance with the National Ambient Air Standard, the limits of reliability, precision and accuracy, must be determined. This is done by conducting a collaborative test which results in standardization of the method.

Before planning the collaborative test, the method is evaluated to determine if it is sufficiently reliable to justify a collaborative test.

It is anticipated that the work will begin 1/73 and be completed 1/74.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
_X CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72 - 6/73
B. $40,000
C. N/A
D. ROAP 26AAF Task 09

SI-SIE-72A; REV. 6-64

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Collaborative Testing and Standardization of Ambient Air Method for Beryllium

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Beryllium has been designated as a hazardous material requiring control by industries emitting this pollutant. One option to determine compliance with the standard is the measurement of outplant ambient concentrations. Therefore, the method to be used to determine compliance with this standard needs to be collaboratively tested to determine the limits of reliability, accuracy and precision, of the data. These data then serve to standardize the method.

It is anticipated that the work will begin 12/72 and be completed 4/73.

METHOD OF SUPPORT (CHECK ONE)

- x INTRAMURAL
- __ CONTRACT
- __ GRANT
- __ INTERAGENCY AGREEMENT
- __ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

A. 7/72 - 6/73
B. $21,500
C. N/A
D. ROAP 26AAF Task 12

SI-SIE-7-A, REV. 6-64

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Collaborative Testing and Standardization of Reference Method for SO_2, 24-hour procedure.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

M. E. Beard, Research Chemist, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This task involves participating as an actual collaborator in a collaborative test of the 24-hour collection procedure in the pararosaniline reference method for SO_2. The collaborative test of this procedure is needed to complete the standardization of this method.

It is anticipated that the task will begin 11/72 and be completed 1/73.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72 - 6/73
B. $2,800
C. N/A
D. ROAP 26AAF Task 19

SI-SIE-79A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of Information on Ambient Air Methods and Instruments

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. George Kupchik, Executive Secretary, The Intersociety Committee, 250 W. 57th Street, New York, New York 10019 - Project Director.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

EPA has need of advice on ambient air measurement methodology from the air pollution scientific community. This work provides EPA with such advice from the Intersociety Committee which is composed of representatives from 12 technical and professional societies and 12 subcommittees made up of recognized experts in air pollution measurement methodology. This work is carried out under a continuing contract with the American Public Health Association.

The work started 1/71 and is anticipated to be completed 8/73.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

X CONTRACT No. 68-02-0024

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

A. 7/72 - 6/73
B. $75,000
C. N/A
D. ROAP 26AAF Task 20

SI-SIE-28A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of Procedures for Evaluating Air Pollution Instruments

Give names, departments, and official titles of **PRINCIPAL INVESTIGATORS** and **ALL OTHER PROFESSIONAL PERSONNEL** engaged on the project.

Dr. P. K. Mueller, Director, Air and Industrial Hygiene Laboratory, California Department of Public Health, Berkeley, California - Project Director.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work is to develop and test procedures by which instruments used for measuring air pollutants can be evaluated. The work is carried out under a continuing contract with the California State Department of Public Health.

The project was started 6/71 and is anticipated to be completed 12/72.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

_X_ CONTRACT No. 68-02-0214

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 7/72 - 6/73
B. $120,000
C. N/A
D. ROAP 26AAF Task 21

SI-SIE-26A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Standardize Method for Determining Visible Emissions from Stationary Sources

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas, - Project Director.

M. R. Midgett, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711, - EPA Project Officer

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work is to standardize the method for determining visible emissions from selected stationary sources as specified in the Standards of Performance for New Stationary Sources, Federal Register, December 23, 1971. Standardization requires an interlaboratory collaborative test of the method to develop necessary precision and, if possible, accuracy information. The work will be carried out by a continuing contract with the Southwest Research Institute.

It is anticipated that the work will begin 1/73 and be completed 7/73

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT No. 68-02-0623
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________________

A. 7/72 - 6/73
B. $35,000
C. N/A
D. ROAP 26AAG Task 06

SI-SIE-76A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:
Standardize Method for Measuring Nitrogen Oxide Emissions from Nitric Acid Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.
Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas - Project Director.

M. R. Midgett, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work is to standardize the method for determining nitrogen oxide emissions from nitric acid plants as specified in the Standards of Performance for New Stationary Sources, Federal Register, December 23, 1971. Standardization requires an interlaboratory collaborative test of the method to develop necessary precision and, if possible, accuracy information. The work will be carried out partially by continuing contract with Southwest Research Institute and partially in house.

It is anticipated that the work will begin 1/73 and be completed 8/73.

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
X CONTRACT No. 68-02-0623 and No. 68-02-0626
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 7/73 - 6/73
B. $51,000
C. N/A
D. ROAP 26AAG Task 07 and Task 08

SI-SIE-7EA; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Standardize Method for Measuring Sulfur Oxides (Emissions) from Sulfuric Acid Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas - Project Director.

M. R. Midgett, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work is to standardize the method for determining sulfur oxides emissions from sulfuric acid plants as specified in the Standards of Performance for New Stationary Sources, Federal Register, December 23, 1971. Standardization requires an interlaboratory collaborative test of the method to develop necessary precision and, if possible, accuracy information. The work will be carried out by a continuing contract with Southwest Research Institute.

It is anticipated that the work will begin 1/73 and be completed 9/73.

METHOD OF SUPPORT (CHECK ONE)

☐ INTRAMURAL
☒ CONTRACT No. 68-02-0623 and No. 68-02-0626
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______________________

A. 7/72 - 6/73
B. $45,000
C. N/A
D. ROAP 26AAG - Task 09

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Standardize Method for Measuring Particulate Emissions from Incinerators

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas, - Project Director.

M. R. Midgett, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work is to standardize the method for determining particulate emissions from incinerators as specified in the Standards of Performance for New Stationary Sources, Federal Register, December 23, 1971. Standardization requires an interlaboratory collaborative test of the method to develop necessary precision and, if possible, accuracy information. The work will be carried out by a continuing contract with Southwest Research Institute.

It is anticipated that the work will begin 1/73 and be completed 6/73.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

X CONTRACT No. 68-02-0623 and No. 68-02-0626

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72 - 6/73
B. $50,000
C. N/A
D. ROAP 26AAG Task 11

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Standardize Method for Measuring Particulates Emissions from Cement Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas - Project Director.

M. R. Midgett, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work is to standardize the method for determining particulate emissions from cement plants as specified in the Standards of Performance for New Stationary Sources, Federal Register, December 23, 1971. Standardization requires an interlaboratory collaborative test of the method to develop necessary precision and, if possible, accuracy information. The work will be carried out by a continuing contract with Southwest Research Institute.

It is anticipated that the work will begin 1/73 and be completed 7/73.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

X CONTRACT No. 68-02-0623 and No. 68-02-0626

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

A. 7/72 - 6/73
B. $70,000
C. N/A
D. ROAP 26AAG Task 12

SI-SIE 78A; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Standardize Method for Measuring Beryllium Emissions from Processing and Housing Facilities

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas - Project Director.

M. R. Midgett, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work is to standardize a method for determining beryllium emissions from processing and handling facilities for use with the yet to be promulgated Hazardous Pollution Emission Standards. Standardization requires an interlaboratory collaborative test of the method to develop necessary precision and, if possible, accuracy information. The work will be carried out partially by continuing contract with Southwest Research Institute and partially in house.

It is anticipated that the work will start 3/73 and be completed 1/74.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT No. 68-02-0626
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72 - 6/73
B. $11,000
C. N/A
D. ROAP 26AAG Tasks 13 and 14

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Standardize Method for Measuring Mercury Emissions from Ore Processing Facilities and Chlor-Alkali Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas - Project Director.

M. R. Midgett, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work is to standardize a method for determining mercury emissions from ore processing facilities and chlor-alkali plants for use with the yet to be promulgated Hazardous Pollutant Emission Standards. Standardization requires an interlaboratory collaborative test of the method to develop necessary precision and, if possible, accuracy information. The work will be carried out partially by continuing contract with Southwest Research Institute and partially in house.

It is anticipated that the work will begin 5/73 and be completed 1/74.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT No. 68-02-0626
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72 - 6/73
B. $10,000
C. N/A
D. ROAP 26AAG Tasks 15 and 16

SI-SIE-76A, REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Standardize Method for Measuring Hydrogen Sulfide in Refinery Process Gases

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas - Project Director.

M. R. Midgett, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work is to standardize a method for measuring hydrogen sulfide in refinery process gas emissions for use with the yet to be promulgated new source performance standards for this industry. Standardization requires an interlaboratory collaborative test of the method to develop necessary precision and, if possible, accuracy information. The work will be carried out by a continuing contract with Southwest Research Institute.

It is anticipated that the work will begin 6/73 and be completed 2/74.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT No. 68-02-0626
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____

A. 7/72 - 6/73
B. $60,000
C. N/A
D. ROAP 26AAG Task 18

SI-SIE-72A, REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Standardize Method for Measuring Odors from Rendering Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.
Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas - Project Director.

M. R. Midgett, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of the work is to standardize a method for measuring odor emissions from rendering plants for use with the yet to be promulgated new source performance standards for this industry. Standardization requires an interlaboratory collaborative test of the method to develop necessary precision and, if possible, accuracy information. The work will be carried out by a continuing contract with Southwest Research Institute.

It is anticipated that the work will begin 5/73 and be completed 1/74.

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
X CONTRACT No. 68-02-0626
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72 - 6/73
B. $27,000
C. N/A
D. ROAP 26AAG Task 19

SI-SIE-74A, REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Standardize Method for Measuring Lead Emission from Non-Ferrous Smelters

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. H. C. McKee, Assistant Director, Department of Chemistry and Chemical Engineering, Southwest Research Institute, Houston, Texas - Project Director.

M. R. Midgett, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711 - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this work i to standardize a method for measuring lead emissions from non-ferrous smelters for use with the yet to be promulgated new source performance standards for this industry. Standardization requires an interlaboratory collaborative test of the method to develop necessary precision and, if possible, accuracy information. A beginning will be made on this method in FY-73 by in-house work. Funding for collaborative testing is anticipated in FY-74.

It is anticipated that the in-house task will begin 5/73 and be completed 8/73.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________

A. 7/72 - 6/73
B. $6,000
C. N/A
D. ROAP 26AAG Task 21

SI-515-78A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of Information on Methods for Source Sampling and Analysis

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. George Kupchik, Executive Secretary, The Intersociety Committee, 250 W. 57th Street, New York, New York 10019 - Project Director.

Dr. John B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina - EPA Project Officer.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

EPA has need of advice on methods for source sampling and analysis from the air pollution scientific community. This work provides EPA with such advice from the Intersociety Committee which is composed of representatives from 12 technical and professional societies and 12 subcommittees made up of recognized experts in air pollution measurement methodology. This work is carried out under a continuing contract with the American Public Health Association.

The work started in 1/71 and is anticipated to be completed 8/73.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

_X CONTRACT No. 68-02-0024

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72 - 6/73
B. $75,000.
C. N/A
D. ROAP 26AAG Task 37

SI-SIE-76A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of Standard Reference Material for Hydrocarbon Measurement in Ambient Air

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A gaseous standard reference material for non-methane hydrocarbons found in ambient air is needed for use in standardizing the measurement method of the National Ambient Air Quality Standard. This task will provide such a standard and the work will be carried out under contract to be negotiated during FY-73.

It is anticipated that the work will be started by 3/1/73 and will be completed by 3/1/74.

METHOD OF SUPPORT (CHECK ONE)

- __ INTRAMURAL
- _x_ CONTRACT
- __ GRANT
- __ INTERAGENCY AGREEMENT
- __ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72 - 6/73
B. $50,000
C. N/A
D. ROAP 26ADZ Task 02

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of Standard Reference Material for Beryllium Measurements in Ambient Air.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A particulate standard reference material for beryllium is needed to standardize methods for measuring this pollutant in ambient air. This task will provide such a standard.

It is anticipated that this work will begin 12/72 and be completed 3/73.

METHOD OF SUPPORT (CHECK ONE)

_x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

A. 7/72 - 6/73
C. $8,000
D. N/A
E. ROAP 26ADZ Task 03

51-SIE-7AA; REV. 8-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of a Standard Reference Material for Lead Measurements in Ambient Air

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A particulate standard reference material for lead is needed to standardize methods for measuring pollutants in ambient air. This task will provide such a standard and the work will be carried out under contract to be negotiated during FY 73.

It is anticipated that the work will be started by 3/73 and be completed by 3/74.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

A. 7/72 - 6/73
B. $20,000
C. N/A
D. ROAP 26ADZ Task 05

SI-SIE-76A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of a Standard Reference Material for Carbon Monoxide Measurement in Stationary Source Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A gaseous standard reference material for carbon monoxide is needed to standardize methods for measuring this pollutant in stationary source emissions. This task will provide such a standard and the work will be carried out under contract to be negotiated during FY 73.

It is anticipated that the work will begin 3/73 and be completed by 9/73.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

_X CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

A. 7/72 - 6/73
B. $24,000
C. N/A
D. ROAP 26ADZ Task 11

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of a Standard Reference Material for Hydrogen Sulfide in Stationary Source Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.
Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A gaseous standard reference material for hydrogen sulfide is needed to standardize methods for measuring this pollutant from stationary source emissions. This task will provide such a standard and the work will be carried out under contract to be negotiated during FY-73.

It is anticipated that the work will begin 3/73 and will be completed b6 3/74.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
X CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

A. 7/72 - 6/73
B. $23,000
C. N/A
D. ROAP 26ADZ Task 12

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Development of Standard Reference Materials for NO_x Measurements in Stationary Source Emissions.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Standard Reference Materials are stable materials analyzed, for specific materials, with a high degree of accuracy. These SRM's are used as standards of comparison to establish the accuracy of analytical methods. An SRM for NO_x ($NO + NO_2$) is needed to establish the accuracy of methods used to determine compliance with the stationary source emission standard for NO_x.

It is anticipated that their work will begin 3/73 and be completed 9/73.

METHOD OF SUPPORT (CHECK ONE)

☐ INTRAMURAL
☐ CONTRACT
☐ GRANT
☒ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 7/72 - 6/73
B. $45,000
C. N/A
D. ROAP 26ADZ Task 13

SI-SIE-76A, REV. 8-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Develop an SRM for NO Measurements in Mobile Source Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 27711.

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Standard Reference Materials are stable materials analyzed, for specific materials, with a high degree of accuracy. These SRM's are used as standards of comparison to establish the accuracy of analytical methods. An SRM for NO is needed to establish the accuracy of methods used to determine compliance with mobile source standards for NO.

It is anticipated that the work will begin 4/73 and be completed 4/74.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

x CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

A. 7/72 - 6/73
B. $7,000
C. N/A
D. ROAP 26ADZ Task 16

SI-SIE-74A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Develop an SRM for CO_2 Measurements in Mobile Source Emissions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Reserach Center, Research Triangle Park, North Carolina 27711

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Standard Reference Materials are stable materials analyzed, for specific materials, with a high degree of accuracy. Such a material is needed for CO_2 because one of the methods specified for determining compliance with the mobile source emission standards requires calibration with CO_2.

It is anticipated that this work will begin 4/73 and be completed 4/74.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

_x CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

A. 7/72 - 6/73
B. $2,000
C. N/A
D. ROAP 26ADZ Task 17

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Standardization of Test Methods for Measurement of CO, NC, and NO_x Emissions from Light Duty Vehicles

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Clements, Chief, Office of Measurement Standardization, National Environmental Research Center, Research Triangle Park, North Carolina 2-711

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Analytical methods have been specified for use in determining compliance with mobile source emission standards for CO, NC and NO_x. However, the limits of reliability, precision and accuracy, need to be established for these methods if the compliance test data is to be legally valid. This is done by collaborative testing; the results of the collaborative test can then be used to standardize the method.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
x CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

A. 7/72 - 6/73
B. $150,000
C. N/A
D. ROAP 26ADE Task 02

OFFICE OF CRITERIA DEVELOPMENT

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Pollutant Priorities

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Jack Suggs
Orin Stopinski
Gordon Hueter

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

An objective system will be developed for determination of the relative need of consideration of pollutants for control action.

METHOD OF SUPPORT (CHECK ONE)
XX INTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Preparation of Documents on Cadmium

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NERC-RTP, Special Studies Staff

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summarize existing knowledge of cadmium an air pollutant and recommend need for control and preferred control method, provided control is required. Provide required supporting documentation for control action justification.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Preparation of Documents on Odors

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NERC-RTP, Special Studies Staff

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summarize existing knowledge of odors an air pollutant and recommend need for control and preferred control method, provided control is required. Provide required supporting documentation for control action justification.

METHOD OF SUPPORT (CHECK ONE)
XX INTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Preparation of Documents on Fluorides

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NERC-RTP, Special Studies Staff

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summarize existing knowledge of fluorides an air pollutant and recommend need for control and preferred control method, provided control is required. Provide required supporting documentation for control action justification.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Preparation of Documents on Polycyclic Organic Matter

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NERC-RTP, Special Studies Staff

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summarize existing knowledge of polycyclic organic matter an air pollutant and recommend need for control and preferred control method, provided control is required. Provide required supporting documentation for control action justification.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Preparation of Documents on Polychlorinated Biphenyls

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NERC-RTP, Special Studies Staff

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summarize existing knowledge of polychlorinated biphenyls an air pollutant and recommend need for control and preferred control method, provided control is required. Provide required supporting documentation for control action justification.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Preparation of Documents on Arsenic

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NERC-RTP, Special Studies Staff

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summarize existing knowledge of arsenic an air pollutant and recommend need for control and preferred control method, provided control is required. Provide required supporting documentation for control action justification.

METHOD OF SUPPORT (CHECK ONE)
_X_ INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Preparation of Documents on Manganese

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NERC-RTP, Special Studies Staff

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summarize existing knowledge of manganese an air pollutant and recommend need for control and preferred control method, provided control is required. Provide required supporting documentation for control action justification.

METHOD OF SUPPORT (CHECK ONE)
_x INTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

SI-SIE-75A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Preparation of Documents on Nickel

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NERC-RTP, Special Studies Staff

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summarize existing knowledge of nickel an air pollutant and recommend need for control and preferred control method, provided control is required. Provide required supporting documentation for control action justification.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Preparation of Documents on Chromium

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NERC-RTP, Special Studies Staff

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summarize existing knowledge of chromium an air pollutant and recommend need for control and preferred control method, provided control is required. Provide required supporting documentation for control action justification.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Preparation of Documents on Vanadium

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NERC-RTP, Special Studies Staff

NAME AND ADDRESS OF INSTITUTION:
National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summarize existing knowledge of vanadium an air pollutant and recommend need for control and preferred control method, provided control is required. Provide required supporting documentation for control action justification.

METHOD OF SUPPORT (CHECK ONE)
_XINTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Preparation of Documents on Vapor Phase Organic Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

NERC-RTP, Special Studies Staff

NAME AND ADDRESS OF INSTITUTION: National Environmental Research Center
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summarize existing knowledge of vapor phase organic pollutants an air pollutant and recommend need for control and preferred control method, provided control is required. Provide required supporting documentation for control action justification.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

SI-SIE-78A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Background Document on Particulate Matter

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

National Academy of Sciences, National Research Council

NAME AND ADDRESS OF INSTITUTION: National Academy of Sciences, National Research Council
2101 Constitution Avenue
Washington, D. C. 20418

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The National Academy of Sciences, through its Committee on Biologic Effects of Air Pollutants will convene a panel of experts and prepare a background document on airborne particulate matter, with emphasis on fine particulates. This document will present a review of knowledge on the pollutant and will include sections on effects, sources, measurement techniques and control techniques and will identify areas of needed research.

METHOD OF SUPPORT (CHECK ONE)

__INTRAMURAL

_XCONTRACT

__GRANT

__INTERAGENCY AGREEMENT

__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Background Document on Copper

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

National Academy of Sciences, National Research Council

NAME AND ADDRESS OF INSTITUTION: National Academy of Sciences, National Research Council
2101 Constitution Avenue
Washington, D. C. 20418

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The National Academy of Sciences, through its Committee on Biologic Effects of Air Pollutants will convene a panel of experts and prepare a background document on copper. This document will present a review of knowledge on the pollutant and will include sections on effects, sources, measurement techniques and control techniques and will identify areas of needed research.

METHOD OF SUPPORT (CHECK ONE)
__INTRAMURAL
_X_CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Background Document on Zinc

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

National Academy of Sciences, National Research Council

NAME AND ADDRESS OF INSTITUTION:
National Academy of Sciences, National Research Council
2101 Constitution Avenue
Washington, D. C. 20418

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The National Academy of Sciences, through its Committee on Biologic Effects of Air Pollutants will convene a panel of experts and prepare a background document on zinc. This document will present a review of knowledge on the pollutant and will include sections on effects, sources, measurement techniques and control techniques and will identify areas of needed research.

METHOD OF SUPPORT (CHECK ONE)
_INTRAMURAL
X CONTRACT
_GRANT
_INTERAGENCY AGREEMENT
_OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______________________

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Background Document on Chlorine (including HCl)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

National Academy of Sciences, National Research Council

NAME AND ADDRESS OF INSTITUTION:
National Academy of Sciences, National Research Council
2101 Constitution Avenue
Washington, D. C. 20418

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The National Academy of Sciences, through its Committee on Biologic Effects of Air Pollutants will convene a panel of experts and prepare a background document on chlorine (including HCl). This document will present a review of knowledge on the pollutant and will include sections on effects, sources, measurement techniques and control techniques and will identify areas of needed research.

METHOD OF SUPPORT (CHECK ONE)
__INTRAMURAL
X CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____

SI-SIE-70A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Background Document on Selenium

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

National Academy of Sciences, National Research Council

NAME AND ADDRESS OF INSTITUTION: National Academy of Sciences, National Research Council
2101 Constitution Avenue
Washington, D. C. 20418

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The National Academy of Sciences, through its Committee on Biologic Effects of Air Pollutants will convene a panel of experts and prepare a background document on selenium. This document will present a review of knowledge on the pollutant and will include sections on effects, sources, measurement techniques and control techniques and will identify areas of needed research.

METHOD OF SUPPORT (CHECK ONE)
__INTRAMURAL
_X_CONTRACT
__GRANT
__INTERAGENCY AGREEMENT
__OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________________

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: The Collection, Tabulation, Codification, and Analysis of the World's Air Quality Management Standards

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Arthur C. Stern, Dept. of Environmental Sciences and Engineering, Professor (Project Director)

Werner Martin, Dept. of Environmental Sciences and Engineering, Graduate Student (Research assistant)

Lawrence Kupper, Dept. of Biostatistics, Professor of Biostatistics

NAME AND ADDRESS OF INSTITUTION:

University of North Carolina, Chapel Hill, North Carolina 27514

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Contractor shall perform the following:

Collect and maintain a file of air quality management standards and procedures adopted by regulatory agencies throughout the world.

Develop an index and tabular and graphical format for displaying these data.

Determine common denominators, factors, and relationships among standards and procedures in the same category from various jurisdictions, and among the various categories of standards and procedures.

Determine, through analysis of the standards, the extent that one jurisdiction adopts the standards and procedures of another; the apparent validity of so doing and the results or anticipated results produced.

Propose similar and more meaningful methods of stating and defining air quality management standards and procedures.

Prepare a report in publishable form incorporating the results of these efforts (a - e).

METHOD OF SUPPORT (CHECK ONE)

☐ INTRAMURAL

☒ CONTRACT

☐ GRANT

☐ INTERAGENCY AGREEMENT

☐ OTHER

Professional School
School of Public Health

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

DIVISION OF ECOLOGICAL RESEARCH

SI-SIE/78A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY:

TITLE OF PROJECT:
Acute and Chronic Effects of Individual Pollutants on Specified Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Walter W. Heck, Autecology Branch, Chief

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, DER, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Evaluate the acute and chronic effects on specified plant species promulgated by individual pollutants. Investigations will be conducted under greenhouse conditions. Pollutants used will be SO_2, O_3, NO_x, PAN and particulates. Approximately 75 plant species will be screened for acute damage and about 50 subjected to chronic exposures.

Anticipated project completion date FY 77.

HOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) W. W. Heck

(A) 7/72-7/73
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(D) I. D. # 21 ALR-06

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

"Effects of Air Pollution on Textile Fibers and Dyes"

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

James B. Upham
Materials Branch

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A comprehensive state-of-the-arts report is being prepared, primarily, from information compiled and evaluated by Dr. Victor S. Salvin, University of North Carolina at Greensboro, N. C. The fading of dyes by ozone, sulfur dioxide, and oxides of nitrogen is a recognized major problem in the Textile industry. The degradation of fibers by these pollutants has also been observed. The state-of-the-arts report now being prepared describes what is known about these effects in detail and summarizes the research that has been done in the past.

Both industry and public awareness of the problem is reviewed. The greatest public awareness is concerned with soiling by particulates rather than the effects of gaseous pollutants.

The economic burden to the nation caused by these effects is being calculated. Included in this cost is the development and use of more expensive dyes that are resistant to pollution fading.

This report is expected to be completed in January, 1973.

HOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) For James B. Upham

Funding - FY 73 $12,000 0.5 MY

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: ENVIRONMENTAL PROTECTION AGENCY

TITLE OF PROJECT:

FACTORAL LABORATORY EXPERIMENT TO DETERMINE THE EFFECTS OF AIR POLLUTION ON MATERIALS

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

John W. Spence, Principal Investigator
Fred H. Haynie
James B. Upham
Fred Stump
Jon Gerhard
Charles Robson

NAME AND ADDRESS OF INSTITUTION:

National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A two level factorial experiment has been designed to investigate the direct and synergistic effects of seven environment variables on Weathering steel, galvanized steel, exterior paints and plastics, textile fibers and dyes, rubber, marble and cement. These materials will be exposed in specially designed controlled environment chambers. Each chamber contains means for controlling temperature, relative humidity, air flow, light (Xenon lamp), and individual concentrations of three gaseous pollutants - sulfur dioxide, nitrogen dioxide, and ozone. Individual automatic proportional controllers regulate the concentration of each gaseous pollutants. The controllers are tired into individual analyzers that continuously measure the specific pollutants. The chambers also possess "chill" racks designed to control the temperature of test specimens. During operation, the chambers will be maintained to simulate night-day conditions. Increasing the number of night-day cycles yields an accelerated test procedure.

This factorial experiment will determine what effects exist. Subsequent experiments will establish response relationships that are necessary in setting air quality standards and estimating economic benefits resulting from pollution control efforts.

This report is expected to be completed in October, 1974.

THOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John W. Spence
John W. Spence, Principal Investigat

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Funding FY 73 $115,000 5.5 MY.

SI-SIE/78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT: Impact of Ambient Oxidant Concentrations on Forest Vegetation - Phase II

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Raymond Wilhour, Ecosystems Branch, Forest Pathologist

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, DER, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Mixed conifer ecosystems in the San Bernadino Mountains in California are being altered because of pollution (smog) conditions. Phase I provided a protocol for study of the systems. During Phase II specific research sites will be selected and detailed reports will be issued on experimentation including some pilot studies which will be conducted.

Anticipated completion of task FY 73.

THOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) Raymond Wilhour

(A) 6/71-7/73
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(D) I. D. #21 ALS-02

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

A Survey and Evaluation on the Influence of Air Pollution on Catastrophic Failures of Metals and Alloys

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Jon Gerhard and Fred H. Haynie
Materials Branch

NAME AND ADDRESS OF INSTITUTION:

NERC, Research Triangle Park, North Carolina

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This comprehensive state-of-the-arts survey is to establish an estimated annual cost to the nation of material failures caused by stress corrosion cracking, fatique corrosion, and hydrogen embrittlement induced by air pollution.

The estimate is based on a study of aircraft component failures and aircraft accidents and of catastrophic failures of major character during the past 12 years.

The survey will be completed by December , 1972.

HOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Jon Gerhard
Jon Gerhard

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Funding FY 73 $5,000 0.2 MY

SI-SIE/78A; REV. 9-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY:

TITLE OF PROJECT: Determine the Acute and Chronic Effects of Ethylene and Ambient Oxidants on Specified Plant Species

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Walter W. Heck, Autecology Branch, Chief

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, DER, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Specified plant species will be exposed to selected concentrations of ethylene and to ambient levels of oxidants to determine the acute and chronic effects caused by these gaseous pollutants. Specific components will be added to ambient ozone levels for short and long term experiments. Plant growth and development will be studied. Categories of plant species to be studied include forage crops, vegetables, fruits, floral and ornamental species, forests plants and other native vegetation.

Anticipated project completion date FY 77.

HOD OF SUPPORT (CHECK ONE)

INTRAMURAL

CONTRACT

GRANT

INTERAGENCY AGREEMENT

OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR W. W. Heck

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 7/72-7/72
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(D) I. D. # 21ALR-04

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY:

TITLE OF PROJECT:
Acute and Chronic Pollutant Effects on Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Walter W. Heck, Autecology Branch, Chief

NAME AND ADDRESS OF INSTITUTION:
EPA, NERC, DER, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Ten plants species grown under greenhouse conditions will be exposed to pollutant mixtures. Results will be related to plants grown under similar test conditions in the field. Some of the pollutant mixtures studies will be:

1. $SO_2 + O_3 + NO_2$ + PAN + one particulate (5 combinations)
2. $SO_2 + O_3 + NO_2$
3. O_3 + PAN
4. O_3 + PAN + NO_2
5. $O_3 + NO_2$
6. $SO_2 + O_3 + NO_2$ + one selected particulate

Anticipated project completion date FY 77.

HOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR W. W. Heck

PROFESSIONAL SCHOOL (medical, graduate, etc.)

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:
Acute and Chronic Effects of Pollutants on Vegetation under Field Conditions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Walter W. Heck, Autecology Branch, Chief

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, DER, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Determine acute and chronic responses of plants subjected to individual pollutants under natural field conditions. Results will be compared to those responses recorded under greenhouse conditions. Twenty-five species will be screened for acute effects at specific life stages when grown to maturity. Ten of the twenty-five will be subjected to in-depth chronic studies.

Anticipated completion date FY 77.

THOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR W. W. Heck

PROFESSIONAL SCHOOL (medical, graduate, etc.)

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT: Mechanisms of Action of Ozone and SO_2 on Vegetation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Walter W. Heck, Autecology Branch, Chief

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, DER, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Sites of action and mechanism impairments in soybeans and in ten other plant species receptors caused by ozone and sulphur dioxide will be studied. Investigations will use largely controlled environmental chambers into which the following pollutants will be introduced: O_3, SO_2, NO_2, $O_3 + SO_2$, $SO_2 + NO_2$.

Anticipated project completion date FY 77.

HOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR W. W. Heck

PROFESSIONAL SCHOOL (medical, graduate, etc.)

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(D) I. D. # 21 ALR-10

SI-SIE/78A; REV. 6-64

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:
Population Dynamics Model for Microbiotic Communities

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

William Hunt - Ecosystems Branch, Chief
J. H. B. Garner - Ecosystems Branch, Microbiologist
David Weber - Ecosystems Branch, Plant Pathologist

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, DER, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Soil microbiota under stresses from pollutant hydrocarbons and from acid rainfall will be studied. Laboratory investigations will provide information useful for modeling this aspect of the changing dynamics of the soil system.

Anticipated date of project completion FY 77.

THOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR
William F. Hunt, Jr.
PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 6/72-7/73
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(D) I. D. # 21 ALU-03

SI-SIE/78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT: Biomass Modeling of Agronomic Crops

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Lawrence C. Raniere, Office of Director, Supervisory Research Ecologist
Jack E. Suggs, Ecosystems Branch, Mathematical Statistician
Allen S. Heagle, Autecology Branch, Plant Pathologist
Donald G. Gillette, Office of Director, Staff Agricultural Economist

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NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, DER, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Field and laboratory investigations of important crops stressed by selected pollutants will provide data for modeling accumulative biomass. Currently soybeans and cotton are being tested for plant growth, productivity and for symptoms indicative of physiological impairment. Other food crop species will be tested.

Anticipated completion data of project FY 77.

THOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) L. C. Raniere

(A) 4/72-7/73
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(D) I. D. # 21 ALU-05

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY:

TITLE OF PROJECT: Transport Models for Hazardous Substances into and Through Biotic Components

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Robert P. Botts, Ecosystems Branch, DVM

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, DER, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Hazardous substances such as trace elements, heavy metals and organo-metals commonly found as pollutants will be utilized in investigations with both plant and animal components of ecosystems to determine distributional concentrations and transport coefficients. Data will be used to construct predictive models delineating the fate of the stressors.

Anticipated completion date of project FY 77.

HOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) Robert P. Botts

(A) 4/72-4/73
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(D) I. D. #21 ALU-06

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:
Model Development of "Old Field" Succession

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Thomas Curran, Ecosystems Branch, Biomathematician
Raymond Wilhour, Ecosystems Branch, Forest Pathologist
Harold Bond, Office of the Director, Staff Ecologist

NAME AND ADDRESS OF INSTITUTION:

EPA, NERC, DER, Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Develop models of old field succession in the Piedmont region of North Carolina, which reflect the impact of chosen pollutant stressors on individual species and communities at discrete successional stages. Evaluate the total ecosystem response.

Anticipated date of project completion FY 77.

HOD OF SUPPORT (CHECK ONE)
INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR
PROFESSIONAL SCHOOL (medical, graduate, etc.) Thomas C. Curran

(A) 6/72-6/73
(B) ---------
(C) ---------
(D) I. D. # 21 ALU-04

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Nitrogen and Arsenic Pollutants and Their Fate in the Ecosystem

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. L. H. Wullstein, Professor, Department of Biology

NAME AND ADDRESS OF INSTITUTION:

University of Utah, Salt Lake City, Utah 84112

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1) To determine the extent and mechanisms involved in the absorption and volatilization of N_2 and NO_x in soil samples in a controlled environment. This system provides a test of "nitrification" ability of soils or artificial substrates.

2) To recommend reliable technics for measuring the constitution and composition of transition metal complexes involved in the exchange of atmospheric pollutants with the ecosystem.

3) To develop valid parameters useful for predicting the fate of atmospheric arsenic and nitrogen pollutants in the ecosystem.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

X GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

L. H. Wullstein

PROFESSIONAL SCHOOL (medical, graduate, etc.) Department of Biology

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:
EPA/NERC/Rtp

TITLE OF PROJECT:
Biochemical Effects of Sulfur Dioxide on Higher Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Shang F. Yang, Associate Biochemist, Department of Vegetable Crops

NAME AND ADDRESS OF INSTITUTION:

University of California, Davis, California 95616

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To determine the biochemical mechanism by which SO_2 causes metabolic injury and tissue injury in plants and the biochemical mechanism by which plants may detoxify or tolerate the pollutant.

To determine reaction products generated by the sulfite oxidase system with various metabolites. The relationship of sulfite oxidase to susceptibility of plants to SO_2. To determine the effects of SO_2 on metabolite levels. Effect of SO_2 on pathways of photosynthetic carbon fixation, possible mutagenic effects and differences of SO_2 metabolism in resistant and susceptible plants.

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
__ CONTRACT
_x_ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL
(medical, graduate, etc.) Shang F. Yang
Department of Vegetable Crops

SI-SIE-178A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT: Effect of Air Pollutants on Microbes in vivo and in virto

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Guenther Stotzky, Associate Professor, Biology

NAME AND ADDRESS OF INSTITUTION:

New York University, Washington Square, New York City, New York 10003

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To determine the mechanisms by which air pollutant gases affect microorganisms. To test the possibility that microorganisms can be used as a bio-assay of air pollution. To develop better methods for evaluating effects of air pollution on microorganisms. To determine how microbes and plants serve as "sinks" for air pollutants. Available are a variety of fumigation chambers and apparatus to study the noxious effects of SO_2, H_2S, CO, O_3, NH_3, Cl_2, HF, NO_x and organics such as ethane and aldehydes and New York ambient air.

METHOD OF SUPPORT (CHECK ONE)

☐ INTRAMURAL
☐ CONTRACT
☒ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Guenther Stotzky

PROFESSIONAL SCHOOL (medical, graduate, etc.) Department of Biology

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Effects of Peroxyacetyl Nitrate on Orange Trees

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. C. Ray Thompson, Research Biochemist
Dr. O. C. Taylor, Horticulturist

NAME AND ADDRESS OF INSTITUTION:

University of California at Riverside, Riverside, California 92502

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To determine how much injury peroxyacetyl nitrate (PAN) is causing to producing orange trees in the Los Angeles Basin. Ambient levels of PAN are supplied to young trees to determine effects on leaf drop photosynthesis, respiration and transpiration. Equal levels of PAN will be given to isolated fruit bearing branches to find the effects on blossoming, fruit drop and ultimate yield of mature fruit. An attempt will be made to evaluate the economic losses caused by this pollutant.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
X GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) C. Ray Thompson
Statewide Air Pollution Research Ctr.

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT: Impact of Air Pollutants on Ecosystems

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Michael Treshow, Professor, Department of Biology

NAME AND ADDRESS OF INSTITUTION:

University of Utah, Salt Lake City, Utah 84112

SUMMARY OF PROPOSED WORK – ([illegible] words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A continuation of work that describes four plant communities and determines the effects of O_3 upon them, and to develop a mathematical model of the effects of O_3 on plant communities and simulate the responses of the ecosystem. In ecological field studies, plots have been established in four associations (Palouse grassland, mountain brush, aspen forest and spruce fir). Turnover rates and community stability data have been collected. Biomass production figures are being determined.

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
__ CONTRACT
X GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) Michael Treshow
Department of Biology

SI-SIE-78A; REV. 8-64

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:
Air Pollution Effects on Woody Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Francis A. Wood, Professor of Plant Pathology

NAME AND ADDRESS OF INSTITUTION:

Pennsylvanis State University, University Park, Pennsylvania 16802

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Trees and woody plants of the eastern United States will be exposed to ozone and peroxyacetyl nitrate under controlled environmental conditions in the laboratory. Effects of short term exposure (1-8 hrs) to relative high concentrations of ozone (10-25 pphm) and PAN (10-30 pphm) and of long term exposures (weeks or months) to low concentrations of ozone (2-10 pphm) will be examined. The relative sensitivities of the various species will be established on the basis of damage.

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
__ CONTRACT
x GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR Francis A. Wood

PROFESSIONAL SCHOOL
(medical, graduate, etc.) College of Agriculture

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:
Effects of Air Pollutants on Plant Systems

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Leonard H. Weinstein, Plant Physiologist
Dr. Jay S. Jacobson, Plant Physiologist
Dr. Delbert McCune, Plant Physiologist

NAME AND ADDRESS OF INSTITUTION:

Boyce Thompson Institute, Plant Research, Yonkers, New York 10701

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Dr. Weinstein and his co-workers using a team approach will continue their studies with fluorides and expand the studies to include SO_2. The field program has developed technics for exposures of longer duration and lower concentrations and used them to determine latent or residual effects on crops. Studies of the biochemical basis for susceptibility to fluorides and SO_2 as these pollutants traverse a biological system are in progress. Broad goals are to predict effects that may be significant and to assist in standard setting.

METHOD OF SUPPORT (CHECK ONE)
- __ INTRAMURAL
- __ CONTRACT
- X GRANT
- __ INTERAGENCY AGREEMENT
- __ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) Leonard H. Weinstein
Boyce Thompson Institute, Plant Res.

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Biochemical and Physiological Effects of Oxidant Smog

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. W. M. Dugger, Professor, Department of Life Sciences
Dr. Irwin M. Ting, Associate Professor, Department of Life Sciences
Dr. Robert L. Heath, Associate Professor, Department of Life Sciences

NAME AND ADDRESS OF INSTITUTION:

University of California, Riverside, California 92502

SUMMARY OF PROPOSED WORK – ([illegible] words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To obtain knowledge of how oxidants injure membrane systems within plants.

To elucidate cell repair mechanisms in green plants. Information and models developed during the course of the research should prove useful to geneticists seeking to develop smog-resistant plants. Knowledge of precise tolerance of plants to air pollution at the cellular level will assist in the establishment of more meaningful secondary air quality standards.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
X GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR W. M. Dugger

PROFESSIONAL SCHOOL (medical, graduate, etc.) Department of Life Sciences

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Air Pollution/Plant Disease Interactions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. W. A. Feder, Research Professor, Department of Environmental Sciences
Dr. W. J. Manning, Asst. Professor, Department of Environmental Sciences

NAME AND ADDRESS OF INSTITUTION:

University of Massachusetts, 240 Beaver St., Waltham, Massachusetts

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To determine how concentrations of ozone and NO_2 separately and in combinations currently encountered in the Northeast interact with (a) plant fungi that cause plant disease and (b) the normal microflora of plant leaves and roots.

To determine how these interactions affect plant growth and productivity over extended periods of time.

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
__ CONTRACT
X GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) William A. Feder
Department of Environmental Sci.

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Plant Mechanisms of Ozone Absorption and Tolerance

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. George P. Hanson, Senior Biologist

NAME AND ADDRESS OF INSTITUTION:

Los Angeles State and County Arboretum, Los Angeles, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To investigate the relationship between ascorbic acid concentration and leaves of various plant species and their ozone tolerance. Physiological factors shown to increase the ascorbic acid concentration in plants will be tested and simultaneously compared with their ability to eliminate ozone damage. Other biochemical factors known to have some relationship to ozone tolerance will also be analyzed.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

X GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

George P. Hanson

PROFESSIONAL SCHOOL (medical, graduate, etc.) Research Division

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Effects and Fate of Air Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. A. Clyde Hill, Professor, Department of Biology
Dr. Jesse Bennett, Research Associate, Department of Biology
Dr. Robert Hollist, Research Associate, Department of Biology

NAME AND ADDRESS OF INSTITUTION:

University of Utah, Salt Lake City, Utah 84112

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To determine growth suppression as measured by uptake of carbon dioxide at exposure concentrations too low to cause visible leaf injury.

To determine whether vegetation is a significant sink for gaseous air pollutants. Plants will be exposed in controlled environmental chambers to ozone, Cl_2, HF, SO_2 and PAN. Rate of uptake of CO_2, water loss, size of stomatal apertures will be measured by methods previously developed.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
X GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR A. Clyde Hill

PROFESSIONAL SCHOOL (medical, graduate, etc.) Department of Biology

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
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SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Effects of Air Pollutants on Airborne Microbes

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Bruce Lighthart, Asst. Professor, Biology

NAME AND ADDRESS OF INSTITUTION:

Western Washington State College, Bellingham, Washington 98225

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The study is designed to test the antibacterial activity of five pollutant gases, O_3, CO, NO_2, SO_2 and formaldehyde on 3 bacterial species chosen because they offer a wide range of sensitivity to toxic agents.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

X GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Bruce Lighthart

PROFESSIONAL SCHOOL (medical, graduate, etc.) Biology Department

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NOTICE OF RESEARCH PROJECT
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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Plant Growth Responses to Air Pollutants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Albert List, Assoc. Professor, Biological Sciences
Dr. J. Shapiro, Research Associate

NAME AND ADDRESS OF INSTITUTION:

Drexel University, Philadelphia, Pennsylvania 19104

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To use a recently developed method of measuring plant growth rates to determine effects of SO_2 and ambient polluted air on corn seedlings. Streak photography is used to detect changes in growth rate of primary root, coleoptile and leaves while time lapse photography is used on whole seedlings. Data are transferred to a computer for analysis.

METHOD OF SUPPORT (CHECK ONE)

- __ INTRAMURAL
- __ CONTRACT
- X GRANT
- __ INTERAGENCY AGREEMENT
- __ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) Dr. Albert List
College of Science

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Chromatid Aberrations Induced by SO_2 and NO_2

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Te-Hsui Ma, Associate Professor, Department Biological Sciences

NAME AND ADDRESS OF INSTITUTION:

Western Illinois University, Macomb, Illinois 61455

SUMMARY OF PROPOSED WORK – ([illegible] words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To study induced cytological aberrations in pollen tube chromosomes of Tradescantia. Pollen is treated with fumes containing mutagens SO_2 and NO_2. Then the pollen tube is grown in tissue culture and prepared for cytological examination.

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
__ CONTRACT
X GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Te-Hsiu Ma

PROFESSIONAL SCHOOL (medical, graduate, etc.) Department of Biological Sciences

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Hydrogen Fluoride - Air Pollution and Intermediary Metabolism

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Gene W. Miller, Professor Chemistry
Dr. S. B. Chang, Professor Chemistry
Dr. C. J. Lovelace, Associate Professor Biology

NAME AND ADDRESS OF INSTITUTION:

Western Washington State College, Bellingham, Washington

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To characterize the mechanism responsible for the chlorosis and necrotic effect of fluoride plants using amino acid analysis and the measurement of key enzymes in the citric acid cycle.

To define the effects of fluoride at the subcellular level by histochemical and functional studies.

To investigate the synthesis and role of fluoro-carbons in plants.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
x GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR: Gene W. Miller

PROFESSIONAL SCHOOL (medical, graduate, etc.): Department of Chemistry

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Biochemical Effects of Air Pollutant Oxidants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. J. B. Mudd, Professor, Biochemistry, Department of Biochemistry

NAME AND ADDRESS OF INSTITUTION:

University of California, Riverside, California 92502

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To determine the mechanisms of toxic action of ozone and PAN on such complex systems as plant cell organelles under test tube cellular culture technics that the investigator has developed. The relative sensitivity of amino acids to ozone have been related to the inactivation of two enzymes by ozone to their histidine sensitivity. To investigate concentration-time relationships for ozone and PAN in the 0.01 - 10.00 ppm range for a number of biochemicals previously studied only at high oxidant concentrations.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
x_ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J. B. Mudd

PROFESSIONAL SCHOOL (medical, graduate, etc.) Department of Biochemistry

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PUBLICATION REFERENCE

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Effect of Air Pollutants in Cell Growth

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Lawrence Ordin, Professor of Biochemistry

NAME AND ADDRESS OF INSTITUTION:

University of California, Riverside 92502

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The effects of PAN and ozone on the mechanism of growth in higher plants will be determined. This will include determining effects on cell wall metabolism and other metabolic reactions associated with polysaccharide synthesis and turnover. Determination of nucleotide sugar concentrations in response to treatment of plants will be made. Activity of both polysaccharide synthetases and hydrolases will be determined. Determination of relative importance of interference by oxidants with enzyme activity and with biosynthesis of those enzymes will be made.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
x__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Lawrence Ordin

PROFESSIONAL SCHOOL (medical, graduate, etc.) Statewide Air Pollution Research Center

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
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SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Environment - Air Pollution Interactions on Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Douglas P. Ormrod, Professor Horticultural Science

NAME AND ADDRESS OF INSTITUTION:

University of Guelph, Guelph, Ontario, Canada

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To determine precisely the effects of temperature, light intensity, photoperiod, atmospheric humidity, soil water stress and CO_2 levels on responses to ozone, fluorides and other air pollutants in controlled environmental chambers. Several tolerant and sensitive plant species will be studied.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

X GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) Douglas P. Ormrod

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Early Diagnosis of Pollution-Induced Plant Damage

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. John R. Rowlands, Director, Physical and Biological Sciences
Dr. Oxcar W. Van Aubsen, Sr. Res. Scientist

NAME AND ADDRESS OF INSTITUTION:

Southwest Research Institute, San Antonio, Texas 78284

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To submit economically important plants (tobacco, spinach, soybeans, etc.) to air pollutants for various periods of time. Different parts of the plant would then be examined by several sensitive spectroscopic technicques including ESR, MCF and both optical and fluorescence measurements. All physical measurements will be correlated with physiological data including O_2 evolution, CO_2 fixation and biomass yield as influenced by exposure to air pollutants.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
X GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR John R. Rowlands

PROFESSIONAL SCHOOL (medical, graduate, etc.)

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Factors in Response of Austrian Pine to Air Pollution

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Eileen G. Brennan, Asst. Research Professor
Ida A. Leone, Asst. Research Professor

NAME AND ADDRESS OF INSTITUTION:

Rutgers University, New Brunswick, New Jersey 08903

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To identify the pollutant responsible for previous needle damage to Austrian Pine trees by exposing trees to controlled doses of SO_2, HF, O_3, PAN and automobile exhaust. Morphological studies of stomatal development will then be used to evaluate the importance of absorption of the pollutant into the tissue. Studies on physiological differences in individuals will be carried out to account for the wide variation in damage from tree to tree during a 1967 pollution episode.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
X GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________

PROFESSIONAL SCHOOL (medical, graduate, etc.) Eileen G. Brennan
Department of Plant Biology

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SIE NO.

AGENCY NO.
- | -

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Biochemical Effects of Pollutants on Growth of Plants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Joe H. Cherry, Professor
(1) Post Doctoral Associate
(2) Graduate Asst. 50%

NAME AND ADDRESS OF INSTITUTION:

Purdue University, Lafayette, Indiana 47907

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of the research project to study the effects of ozone on germination of corn and soybean seeds and to determine the stage of seedling growth and organ development at which maximum sensitivity to ozone occurs. Studies to determine whether ozone affects enzyme production, ATP formation protein synthesis and nucleic acid synthesis during seedling growth are included.

METHOD OF SUPPORT (CHECK ONE)
__ INTRAMURAL
__ CONTRACT
X GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Joe H. Cherry

PROFESSIONAL SCHOOL (medical, graduate, etc.) Horticulture Department

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
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SIE NO.	-
AGENCY NO.	

SUPPORTING AGENCY:

TITLE OF PROJECT:

Response of Pine Stomata to Ozone and SO_2

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Charles H. Baer, Assistant Professor

NAME AND ADDRESS OF INSTITUTION:

West Virginia University, Department of Biology, Morgantown, West Virginia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To elucidate the individual roles of Ozone and Sulfur Dioxide effects on the stomatal behavior in the needles of eastern white pine and western ponderosa pine. A diffusion resistance porometer which indirectly measures the opening and closing of stomata will be the principal research tool.

METHOD OF SUPPORT (CHECK ONE)

- ___ INTRAMURAL
- ___ CONTRACT
- X GRANT
- ___ INTERAGENCY AGREEMENT
- ___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

Charles H. Baer

PROFESSIONAL SCHOOL (medical, graduate, etc.) Department of Biology

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NOTICE OF RESEARCH PROJECT
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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT: Lead and Other Toxic Heavy Metals in the Atmosphere

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. T. S. Chow, Associate Research Chemist

NAME AND ADDRESS OF INSTITUTION:

Scripps Institute of Oceanography, University of California, La Jolla, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To continue to determine the concentration of lead isotopes and to determine the concentrations of several other metals several sites in the San Diego Area - on Laguna Mountain, and at the High Altitude Observatory on White Mountain. The concentration of lead isotope, copper, iron, manganese, nickel and zinc will be measured.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

x GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Tsiahwa J. Chow

PROFESSIONAL SCHOOL (medical, graduate, etc.) Scripps Institute of Oceanography

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NOTICE OF RESEARCH PROJECT
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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT:

Characterization of Smoke from Cellulosic Fuels

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Ellis F. Darley, Plant Pathologist, University of California, Riverside, Statewide Air Pollution Research Center
Dr. A. Broido, Research Chemist

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The determination and characterization of the effluents produced in the pyrolysis and combustion of cellulose under different heating rates, in different atmospheres, and with differing amounts of inorganic contaminants. Determination of the specific reaction mechanisms whereby these effluents are formed - both in pure and "treated" cellulose.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
[✓ GRANT]
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________
Ellis Darley

PROFESSIONAL SCHOOL (medical, graduate, etc.) University of California, Riverside
Statewide Air Pollution Research Center

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: EPA/NERC/RTP

TITLE OF PROJECT: Air Pollution from Forest and Agricultural Burning

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Ellis Darley, Pathologist, University of California, Riverside
Dr. A. Broido, Research Chemist

NAME AND ADDRESS OF INSTITUTION:

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The use of prescribed burning of forest floor fuel on public and private forest lands is increasingly an important method of reducing fire hazard and maintaining favorable plant species. Burning of agricultural waste is also increasing. The relative importance of these useful burning practices contribute substantially to the burden of particulate burning in the atmosphere. The purpose of this work is by controlled burning of various field studies and instrumented fire towers to determine the quantities and types of contaminants introduced into the environment.

METHOD OF SUPPORT (CHECK ONE)
☐ INTRAMURAL
☐ CONTRACT
☒ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.) Ellis F. Darley
University of California, Riverside
Statewide Air Pollution Research Center

PERRINE PRIMATE LABORATORY

SI-SIE-7A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Evaluation and Review of Health Effects Research Grants

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. Baron, Ph.D., Research Biochemist, Pharmacology Branch
Perrine Primate Laboratory

NAME AND ADDRESS OF INSTITUTION:

Perrine Primate Laboratory, P.O. Box 490, Perrine, Florida 33157

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The mission of Environmental Protection Agency requires the knowledge of many areas which cannot be supported by an inhouse effort. Certain areas may be so newly developed or sophisticated that the development of an inhouse capability could not be accomplished within the necessary timeframe. Additionally it is necessary to have the flexibility of realignment of program and the grant mechanism is an efficient mechanism.

The pesticides health effect effort will be $517,000 and supports work in universities throughout the United States. Research in any area relevant to the needs of pesticides health effects will be considered

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 1-21 AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. Baron

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period: 7/1/72 - 6/30/73

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NOTICE OF RESEARCH PROJECT
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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Effects of long term pesticide exposure on EEG and EKG in Primates

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. A. Santolucito, Ph.D., Chief, Pharmacology Branch, Perrine Primate Laboratory

NAME AND ADDRESS OF INSTITUTION:

Perrine Primate Laboratory, P. O. Box 490. Perrine, Florida 33157

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Human populations are exposed to a complex of environmental stressors including pesticides. Individuals are exposed to these agents, most of which are neurotoxins, throughout their lifetimes either chronically or repeatedly and most often in very low concentrations. The magnitude of the insult may be too slight to manifest itself as an obvious functional deficit yet may result in significant changes in the EEG.

Selected pesticides, based on usage and potential hazard, will be fed to non-human primates at low levels and for prolonged (3 years or more) periods to rule out changes that may be transient. On-line, computer processing of EEG will be performed. The methodology and expertise developed in these studies will be applied to EEG recordings obtained from pesticide exposed humans in order to test the feasibility of EEG as a monitoring procedure using a portable instrument now under development.

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL

☐ CONTRACT

☐ GRANT

☐ INTERAGENCY AGREEMENT

☐ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR J. D. Santolucito

PROFESSIONAL SCHOOL (medical, graduate, etc.)

I.D. 2-21AFM

Current Funding Period: 7/1/72 - 6/30/73

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Effects of pesticides on drug metabolizing enzymes.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. W. Chadwick, Ph.D., Research Pharmacologist, Pharmacology Branch, Perrine
J. E. Davis, M. S., Research Biochemist, Pharmacology Branch, Perrine
J. Goldstein, Ph.D., Research Biochemist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION: Perrine Primate Laboratory, P. O. Box 490, Perrine, Fla.
Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Exposure to pesticides can induce or inhibit the metabolism of drugs. This can result in increased or decreased susceptibility to the drug and thus markedly influence its therapeutic efficacy. Such drug-pesticide interactions must be recognized in order to effectively evaluate and/or predict the therapeutic course associated with drug administration.

Studies will include: (1) Development of an *in vitro* procedure for the metabolism of lindane to chlorophenols, (2) Correlation of rate of appearance of organophosphorus pesticide metabolites to level of liver microsomal mixed function oxidases as an *in vivo* index of enzyme induction. (3) Effects of Arochlors on drug-metabolizing pathways and cytochrome levels. Changes will be related to dose, length of exposure and tissue levels of test compounds.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 3-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. Chadwick
J. Goldstein

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period: 7/1/72 - 6/30/73

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NOTICE OF RESEARCH PROJECT
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SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Primate Teratology

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

K. D. Courtney, Ph.D., Research Pharmacologist, Pharmacology Branch, PPL.
N. Chernoff, Ph.D., Research Pharmacologist, Pharmacology Branch, PPL.

NAME AND ADDRESS OF INSTITUTION:

Perrine Primate Laboratory, P. O. Box 490, Perrine, Florida 33157

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Congenital malformations, fetal wastage, and impaired neonatal development are a source of major medical and sociological problems in today's society. The cause of the majority of these problems is unknown. One possible source that has yet to be evaluated to any extent is low grade toxicity to the mother or the fetus from ubiquitous environmental pollutants such as organic and/or heavy metal pesticides.

The program will utilize primates in the study of compounds which have been shown to possess teratogenic effects in laboratory rodents and will coordinate with the teratology program of NCTR, Pine Bluff.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 4-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR K. D. Courtney

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period: 7/1/72 - 6/30/73

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NOTICE OF RESEARCH PROJECT
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NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: F2a Reproduction Studies in Rodents

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

T. Gaines, Research Toxicologist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:

Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Some pesticides have been shown to have deleterious effects on reproduction in several species of mammals and further, show a more pronounced effect in the second generation than in the first generation. These studies are needed for use by the Agency in establishing safe levels of exposure for these compounds in man.

Rats will be orally administered paraquat, SBP-1382, and hexachlorobenzene from the age of weaning, through maturity and pregnancy. Their offspring will be retained on the same pesticide intake, allowed to mature and reproduce. Counts of viable offspring will be made.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL

__ CONTRACT

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__ INTERAGENCY AGREEMENT

__ OTHER I.D. 5-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. D. Kimbrough

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period: 7/1/72 - 6/30/73

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Acute LD_{50}, Oral and Dermal

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

T. Gaines, Research Toxicologist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:

Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Information on the acute oral and dermal toxicity of pesticide compounds is essential in order to carry out further toxicologic research and field testing with minimal hazard to occupationally exposed humans. There are pesticide compounds in use and under consideration for more extensive use for which acute toxicity data is still insufficient.

SCOPE: The acute oral and dermal toxicity of Torak (R), Maretin (R), tricyclohexyltin hydroxide, and browacil will be studied in laboratory rats and single dose LD_{50} values determined for the adult male and female and for one sex of weanling age rats.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL

__ CONTRACT

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__ INTERAGENCY AGREEMENT

__ OTHER I.D. 6-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. D. Kimbrough

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period: 7/1/72 - 6/30/73

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NOTICE OF RESEARCH PROJECT
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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Effect of pesticides on neuromuscular function and peripheral synaptic performance

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. A. Santolucito, Ph.D., Chief, Pharmacology Branch, Perrine Primate Laboratory

NAME AND ADDRESS OF INSTITUTION:

Perrine Primate Laboratory, P. O. Box 490, Perrine, Florida 33157

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In order to elucidate the effects of pesticides on the EEG, a complex of biopotential transients of the whole brain, there is a need for short-term experiments on isolated peripheral preparations of rats such as the neuromuscular junction and autonomic ganglia. The behavior of these simpler systems will permit interpretations which will result in more efficient use of costly non-human primate EEG studies.

Laboratory rats are used to study conduction of nervous activity in peripheral pathways and its transmission across nerve-muscle and nerve-nerve junctions following administration of pesticides. To utilize this information in the interpretation of pesticide induced changes of the complex EEG.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 7-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR J. A. Santolucito

PROFESSIONAL SCHOOL (medical, grad. arts, etc.)

Current Funding Period 7/1/72 - 6/30/73

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Effect of Pesticides on Intermediary Metabolism

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. Goldstein, Ph.D., Research Biochemist, Chamblee Toxicology Branch
R. Baron, Ph.D., Research Chemist, Pharmacology Branch

NAME AND ADDRESS OF INSTITUTION:

Chamblee Toxicology Branch, Chamblee, Georgia
Perrine Primate Laboratory, Perrine, Florida

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Pesticides have been shown to produce changes in intermediary metabolic pathways. Examples are: Acquired porphyria by alteration of heme synthesis, physiological and pathological changes produced by hormone imbalance and altered lipid metabolism and changes in amino acids in the brain. Further data is needed by the agency to establish threshold levels and set minimum safety concentration levels in body tissues.

Small laboratory mammals and non-human primates will be administered selected pesticides according to usage and/or relative acute toxicity. Intermediary metabolic pathways will be assessed for rates of activity and abnormal performance. These observations will be correlated with pesticide and/or metabolites level in the body tissues. Changes will be related to dose and duration of exposure.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 8-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR J. Goldstein
R. Baron

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period: 7/1/72 - 6/30/73

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NOTICE OF RESEARCH PROJECT
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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Non-primate Teratology

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

K. D. Courtney, Ph.D., Research Pharmacologist, Pharmacology Branch, Perrine
N. Chernoff, Ph.D., Research Pharmacologist, Pharmacology Branch, Perrine

NAME AND ADDRESS OF INSTITUTION:

Perrine Primate Laboratory, P. O. Box 490, Perrine, Florida 33157

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The investigation of congenital malformations associated with pesticide exposure using non-human primates is costly in time and money. In order to make optimum use of the primates, preliminary screening of suspected compounds should be accomplished using laboratory rodents.

The teratology studies are intended to form a comprehensive picture of effects on fetal development in a variety of non-primate species (mouse, rat, hamster). The program will coordinate with the teratology program of NCTR at Pine Bluff.

METHOD OF SUPPORT (CHECK ONE)

_X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 9-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR N. Chernoff

PROFESSIONAL SCHOOL (medical, grad. sch., etc.)

Current Funding Period: 7/1/72 - 6/30/73

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Polychlorinated biphenyl-bladder cancer study.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. Kimbrough, M.D., Pathologist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:

Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

During the course of a long term oral toxicity study in Sherman strain rats, a malignant bladder tumor was found in one of ten female rats at the dietary exposure of 100 ppm Aroclor 1260 (a PCB). Spontaneous bladder cancers in rats are almost non-existent. Since Aroclor 1260 is found increasingly in the environment it is important to determine whether this compound is a bladder carcinogen. Autopsies will be performed at the end of the study and tissues, particularly the bladder, examined microscopically.

The purpose of this study is to determine in a reasonably large number of animals whether the previously observed bladder cancer was caused by the carcinogenic action of Aroclor 1260 or a metabolite thereof or whether it was an incidental finding.

METHOD OF SUPPORT (CHECK ONE)

- X INTRAMURAL
- __ CONTRACT
- __ GRANT
- __ INTERAGENCY AGREEMENT
- __ OTHER I. D. 10-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. D. Kimbrough

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period: 7/1/72 - 6/30/73

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Single Pregnancy Studies

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

T. Gaines, Research Toxicologist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:

Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Long-term studies on pesticide-induced alterations of reproduction cannot readily distinguish between pre- and post-implatation effects. Studies in which the pesticide compound is administered post-implantation are needed to demonstrate effects on pregnancy per se.

The effect of paraquat, SBP-1382 and hexachlorobenzene on established pregnancy and development of offspring to weaning age will be studied.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER I. D. 11-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. D. Kimbrough

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period: 7/1/72 - 6/30/73

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SCIENCE INFORMATION EXCHANGE
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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Neurotoxicity Screening

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

T. Gaines, Research Toxicologist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:

Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Some organophoshorus pesticide agents have been found to induce demyelination of peripheral nerves, and/or paralysis in chickens. This reaction can serve as a screening test to identify those compounds which are potentially most toxic to the nervous system in repeated dosages. This project will determine if the organic phosphorus compounds Monitor(R), Torak(R) and Maretin(R) cause paralysis in chicken hens when the compounds are administered subcutaneously at various dosage levels.

METHOD OF SUPPORT (CHECK ONE)

_X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER I.D. 12-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. D. Kimbrough

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72 - 6/30/73

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Provision of Baseline Clinical Profiles of Primates

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. K. Hinkle, D.V.M., Veterinarian, Pharmacology Branch, Perrine Primate Lab.

NAME AND ADDRESS OF INSTITUTION:

Perrine Primate Laboratory, Perrine, Florida

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Baseline clinical values for blood and urine must be used as a basis upon which to evaluate possible pesticide effects. Since baseline values can vary depending on environmental conditions of the primates, there is a need to obtain this information from the animals to be used for an experiment and in the locale of the experiment.

Clinical support provided, essential to the carrying out of controlled experiments, includes hematology, microbiology, and parasitology.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER I.D. 13-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR D. K. Hinkle

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period: 7/1/72 - 6/30/73

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Influence of pesticides on pituitary hormone secretion and correlation with EEG.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. A. Santolucito, Chief, Pharmacology Branch, Perrine Primate Laboratory

NAME AND ADDRESS OF INSTITUTION:

Perrine Primate Laboratory, Perrine, Florida

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Low level chronic exposure to neurotoxins such as pesticides produce subtle alterations of central nervous function including neuroendocrine activity. The magnitude of these changes needs to be evaluated in order to assess the hazard of these environmental pollutants to human health.

This project will determine the electrophoretic profile of pituitary hormones from pesticide-treated animals and correlate these findings with electrical activity of neuroendocrine centers in the hypothalamus. Program will be extended to primates when it is possible to measure circulating pituitary hormone levels.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER

I.D. 14-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR J. A. Santolucito

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72 - 6/30/73

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Electronmicroscopy-Ultrastructural Studies of Specific Organs

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. Kimbrough, M. D., Pathologist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:

Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Many pesticides induce changes in organs that seem rather insignificant when studied under the light microscope, for example, the liver enlargement caused by chlorinated hydrocarbons. Examination of this tissue under the electron microscope shows that pronounced changes have occurred in the ultrastructure of the cell. Another application of the electron microscope is in the study of grossly detectable lesions caused by pesticides in order to give a better understanding of the lesion and possibly mechanism of action of the pesticide. The obtained information will aid in setting toleranc levels and will give information on the nature of the effect that can be expected from the pesticides.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 15-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. D. Kimbrough

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72 - 6/30/73

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SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Subacute toxicity including chronicity factors

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

T. Gaines, Research Toxicologist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:
Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In order to establish safe levels of exposure to pesticides in occupationally exposed humans, the subacute toxicity of repeated dosages must be determined. The 90-dose LD_{50} has been determined for only a few of the pesticides in common usage. This data is essential to the Agency in setting labeling requirements. Ninety-day subacute toxicity studies will be conducted for Monitor$^{(R)}$, Torak$^{(R)}$, and Maretin$^{(R)}$ using laboratory rodents.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 16-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. D. Kimbrough

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72-6/30/73

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Pesticide pharmacodynamics in rodents and primates (distribution, metabolism, and excretion).

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. Baron, Ph.D., Research Chemist, Pharmacology Branch, Perrine Primate Lab.
F. Copeland, M.S., Research Pharmacologist, Pharmacology Branch, Perrine.
J. E. Suggs, Ph.D., Research Pharmacologist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:
Perrine Primate Laboratory, Perrine, Florida
Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In order to define and elucidate the mechanism of action of a toxic agent, the route and rate of absorption, the distribution in the blood and organs and the route and rate of metabolism has to be investigated.

The purpose of the study is to determine the fundamental characteristics of absorption, distribution and metabolism of selected toxic agents.

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER I.D. 18-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. Baron
J. E. Suggs

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period - 7/1/72 - 6/30/73

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Heme Synthesis and Metabolism

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. Goldstein, Ph.D., Research Biochemist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:

Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Exposure to pesticides can induce alterations in heme synthesis and result in porphyria. Studies on the specific enzyme vulnerabilities are essential to an understanding of the mechanism of action of the toxic compounds and are needed by the Agency to establish safety standards.

Laboratory rats will be used in the study of effects of environmental chemicals on heme synthesis and porphyrin excretion as well as tissue cytochrome levels.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER I.D. 19-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. D. Kimbrough

PROFESSIONAL SCHOOL (medical, graduate, etc.)

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Biochemical NMR studies of the mechanism of interactions of toxicants with enzymes

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. Ross, Ph.D., Research Chemist, Chemistry Branch, Perrine Primate Laboratory
R. Baron, Ph.D., Research Chemist, Pharmacology Branch, Perrine Primate Lab.

NAME AND ADDRESS OF INSTITUTION:

Perrine Primate Laboratory, Perrine, Florida

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Pesticides have been shown to affect multiple enzymes, rather than a specific enzyme, by attaching to groupings on the molecule common to all the enzymes it affects. Biochemical NMR studies disclose the nature of the complexing and identify vulnerable groups. These studies are essential for predicting the toal impact a pesticide toxicant will have on an exposed animal.

This project will recover enzyme-pesticide complexes from treated animals and subject them to NMR spectroscopy. Derive the chemical nature of the complexing from the spectrographic data.

The project will make use of pesticide-treated animal tissues from other experiments thus extending the information obtained from them.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 20-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR: R. Ross
R. Baron

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________

Current Funding Period: 7/1/72 - 6/30/73

SI-SIE-78A; REV. 8-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Measurement of Exposure under Field Conditions

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

H. Wolfe, M.S., Research Pharmacologist, Pharmacology Branch, Perrine Primate Laboratory

NAME AND ADDRESS OF INSTITUTION:
Wenatchee Pesticide Laboratory, Wenatchee, Washington

SUMMARY OF PROPOSED WORK -- (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is important to determine the magnitude of human exposure to various pesticides, particularly those of high toxicity, under actual conditions of field application. The information is needed in order to ensure the safety of field applicators.

Exposed workers and incidentally exposed individuals will be studied to determine the route and rate of uptake for different pesticide formulations.

METHOD OF SUPPORT (CHECK ONE)

_X_ INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER I.D. 21-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR Homer Wolfe

PROFESSIONAL SCHOOL (medical, grad. sch., etc.)

Current Funding Period: 7/1/72 - 6/30/73

SI-SIE-7A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Clinical Investigations Related to Field Exposure

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

H. Wolfe, M.S., Research Pharmacologist, Pharmacology Branch, PPL

NAME AND ADDRESS OF INSTITUTION:

Wenatchee Pesticide Laboratory, Wenatchee, Washington

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Effects of heavy pesticide exposure in humans such as pulmonary function, skin reactions and blood cholinesterase must be recognized so that they in turn can be used as indicators of pending excessive exposure. This project will monitor blood cholinesterase of workers exposed to organophosphate and carbamate pesticides. Measure urinary metabolites of pesticide exposed individuals. Conduct examinations for adverse skin reactions.

METHOD OF SUPPORT (CHECK ONE)
_X_ INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 22-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR H. Wolfe

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period: 7/1/72 - 6/30/73

SI-SIE-78 A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Maintain Experimental Animal Facility

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. K. Hinkle, DVM, Animal Resources, Pharmacology Branch, Perrine Primate Lab.

NAME AND ADDRESS OF INSTITUTION:

Perrine Primate Laboratory, P. O. Box 490, Perrine, Florida 33157

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Biomedical investigations of possible toxic compounds to which man is exposed require the use of animal models and controlled experiments from which reliable data may be derived and extrpolated to man. Both lower mammals and non-human primates are required as animal models. This project will (1) Provide healthy research animals of proper species, strain, sex and age for the toxicologic problem under investigation. (2) Provide professional veterinary medical care for all research animals, including emergency care for ill or injured animals, and regular physical examinations. (3) Provide surgically prepared animal models when requested by investigators. (4) Write research animal procurement specifications which will ensure the receipt of animals that meet requirements. (5) Advise laboratory personnel on matters pertaining to veterinary public health and status of pending or in force laboratory animal welfare legislation.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 23-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR D. K. Hinkle

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72 - 6/30/73

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Establish Primate Breeding Colony.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

D. K. Hinkle, D.V.M., Animal Resources, Pharmacology Branch, PPL.

NAME AND ADDRESS OF INSTITUTION:

Perrine Primate Laboratory, Perrine, Florida 33157

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Primate toxicologic research in reproduction and teratology require timed pregnancies. These are inconvenient, costly, and sometimes impossible to acquire from a commercial source. This project will (1) establish and maintain a close primate breeding colony for both Asian and South American primates. (2) Produce, in addition to offspring needed for reproduction and development studies, a surplus of offspring needed for other non-human primate toxicologic research.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER I. D. 24-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR D. K. Hinkle

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72 - 6/30/73

SI-SIE-70A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: General analytical support of intra-laboratory toxicology

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. Moseman, Ph.D., Research Chemist, Chamblee Toxicology Branch
A. Robbins, M. S., Research Chemist, Perrine Primate Laboratory
R. Baron, Ph.D., Research Pharmacology, Perrine Primate Laboratory

NAME AND ADDRESS OF INSTITUTION:
Perrine Primate Laboratory, Perrine, Florida
Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Studies on the biological effects of pesticides and their metabolism must be accompanied by determinations of the levels of pesticides and/or metabolites in body tissues and excretions in order to verify the relation between exposure and effect. This support is essential therefore to the total toxicology effort.

Expertise in analytical methodology will be maintained within each laboratory in order to provide data on pesticide and metabolite levels in tissues of animals exposed to pesticides.

METHOD OF SUPPORT (CHECK ONE)

x INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 25-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR: R. Moseman
R. Baron

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period: 7/1/72 - 6/30/73

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: General pathology support of intra-laboratory toxicologic studies

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. Kimbrough, M.D., Pathologist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:

Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In order to properly evaluate the effects of pesticides the determination of pathological changes in animals exposed to these compounds is important. The findings recorded in the course of pathological studies will support reulatory efforts and will help establish meaningful standards in outlining exposure levels for the general population and also high exposure groups.

Autopsies will be performed on animals dosed orally or dermally with pesticides and the effects on the organs evaluated by macroscopic and microscopic study. The animals are obtained from subacute and chronic feeding studies and reproduction studies.

Organs of rats fed different dietary levels of SB 1382 (a pyrethrum compound), Paraquat, Disulfoton and hexachlorobenzene will be studied. In addition examination of organs of rats fed Aroclor 1260 and Aroclor 1254 will be completed. Long term reproduction studies have been performed with most of these animals prior to sacrifice.

METHOD OF SUPPORT (CHECK ONE)

/X INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER I.D. 26-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. D. Kimbrough

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72 - 6/30/73

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Clinical Pathology

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

T. Scotti, M. D. Pathologist, Pharmacology Branch, Perrine Primate Laboratory
R. Kimbrough, M.D., Pathologist, Chamblee Toxicology Branch
D. K. Hinkle, D.V.M., Veterinarian, Pharmacology Branch, PPL

NAME AND ADDRESS OF INSTITUTION.
Perrine Primate Laboratory, Perrine, Florida
Toxicology Laboratory, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Clinical pathology is a necessary adjunct to toxicologic research. These studies will provide information needed by the agency for regulatory purposes.

Blood chemistry, plasma protein electrophoretic profiles and tests of renal and hepatic function will be done and reports submitted.

METHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 27-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR: T. Scotti
R. Kimbrough

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72 - 6/30/73

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: General pathology support of interagency toxicology rodent studies.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. Kimbrough, M. D. Pathologist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:

Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In order to properly evaluate the effects of pesticides the determination of pathological changes in animals exposed to these compounds is important. This project performs pathological examinations of pesticide-treated animal tssues for other agency projects when otherwise not available to them on a need basis and within the work resources of the pathology group.

METHOD OF SUPPORT (CHECK ONE)

☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER I.D. 28-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. Kimbrough

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72 - 6/30/73

SI-SIE-78A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: General Biochemical and Analytical Support of Interagency Toxicology

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

R. Baron, Ph.D., Research Chemist, Pharmacology Branch, PP.
J. Davis, M. S., Research Biochemist
J. Goldstein, Ph.D., Research Biochemist, Chamblee Toxicology Branch

NAME AND ADDRESS OF INSTITUTION:
Perrine Primate Laboratory, Perrine, Florida
Chamblee Toxicology Branch, Chamblee, Georgia

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Sophisticated biochemical and analytical procedures are often required in order to complete meaningful toxicologic investigations. These are not always available at each laboratory location. This project will furnish biochemical and/or analytical expertise to interagency toxicologic research on a need basis and within the work resources of the analytical group.

METHOD OF SUPPORT (CHECK ONE)
☒ INTRAMURAL
☐ CONTRACT
☐ GRANT
☐ INTERAGENCY AGREEMENT
☐ OTHER I.D. 29-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR R. Baron
J. Goldstein

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72 - 6/30/73

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Study of decontamination disposal and other special hazard problems associated with pesticides

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

H. Wolfe, M. S., Research Pharmacologist, Pharmacology Branch, Perrine Primate Laboratory

NAME AND ADDRESS OF INSTITUTION:

Wenatchee Pesticide Laboratory, Wenatchee, Washington.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Spillage of toxic pesticides during transportation or storage continues to be a problem. The hazard is from direct contact with the contaminated areas as well as indirectly through contact of foodstuffs or household items placed on such surfaces. In cleanup and decontamination activities it is difficult, if not impossible, to adequately decontaminate certain surfaces. This project conducts continuing studies on the retention characteristics and decontamination methodology for various materials used in roadways, warehouse and loading dock flooring, vehicle flooring, etc., exposed to different pesticide formulations.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 30-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR Homer Wolfe

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72 - 6/30/73

SI-SIE-70A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Mechanism of Insecticide Degradation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

P. I.	F. Matsumura	Dept. of Entomology
	R. Beeman	College of Agricultural and Life Sciences
	A. Kadous	
	J. Nelson	
	J. Doherty	
	Y. Gotoh	

NAME AND ADDRESS OF INSTITUTION:
University of Wisconsin, Madison, Wisconsin

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Attempts are being made to survey the patterns of enzymatic degradation of insecticides in insects and mammals including man. The enzymes available for insecticide degradation are being isolated and purified in an effort to study interspecific differences. Efforts are being made to elucidate the site of action of insecticides as well as the mode of poisoning in an effort to estimate the potential and actual hazard to man. Studies are underway on naturally occurring compounds which show specific toxicity towards certain insects but not toward mammals or which show unique biological activity that can be utilized for insect control. These studies are designed to determine the specificity of the mode of action in an effort to permit more efficient pest control measures.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

X GRANT 801060

__ INTERAGENCY AGREEMENT

__ OTHER ROAP 21AFM, Task 48

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________________

May 1, 1972 - April 30, 1972
FY 72 funding - $24,220
Possible FY 73 funding $45,000.

Final Grant Period - New Grant (1973-1978)
Application pending

SI-SIE-70A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Role of Mixed Function Oxidases in Insecticide Action

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

P.I.: Metcalf, Robert L., Hansen, Penny L.	Dept. of Entomology, College of Liberal Arts and Sciences

NAME AND ADDRESS OF INSTITUTION:
University of Illinois, Urbana, Illinois

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The overall objectives of this program are to study the many facets of the mixed function oxidase enzymes in insects, mammals and other vertebrates and invertebrates as the affect the action of insecticides both on target species and on a variety of other organisms in the environment. Studies are being performed on the role of the mixed function oxidases in determining the susceptibility or resistance of target insect species to various insecticides and or the action of synergistic molecules. Studies are being performed on the development of biodegradable and selective insecticides which can be applied with a minimum of disturbance to the ecosystem.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

X GRANT #802022, ROAP 21AFM, Task #37

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Sept 1, 1972 - August 31, 1973 - Budget period
August 31, 1972 (Grant period)
FY 73 funding $22,128
FY 72 funding - $20,885

SI-SIE-78 A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Pesticide Epidemiological Field Studies

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.
J. Davies, Dept. of Medicine, University of Miami

NAME AND ADDRESS OF INSTITUTION:
University of Miami, Miami, Florida

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary objective of this study is to implement field and human studies for the research being carried out by the EPA Perrine Primate Laboratory. These studies will include clinical, toxicologic and therapeutic response observed in humans affected by occupational exposure to pesticides and in normal non-occupationally exposed people. Chemical exploration for possible metabolites of newer pesticides will be performed as well as studies of enzyme induction phenomena. Field studies on the effects of pesticides on EEG responses will be effected. Environmental contamination in south Florida by chlorinated pesticides will be studied through ground and air monitoring techniques

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL
__ CONTRACT
X GRANT #802112 PE 21AFM 1E1078 Task #54
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________________

Proposed Grant Nov. 1, 1972 - October 31, 1972
Requested budget - $70,000 FY 73.

SI-SIE-78A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Evaluation of effectiveness of Protective Clothing, respirators, etc., for protection against pesticides.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

H. Wolfe, M.S., Research Pharmacologist, Pharmacology Branch, Perrine Primate Laboratory

NAME AND ADDRESS OF INSTITUTION:
Wenatchee Pesticide Laboratory, Wenatchee, Washington

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Field evaluation of protective clothing and/or respirators is essential in order to provide effective protection to pesticide workers. This must include not only the barrier characteristics of the items, but also their intolerance by the worker and effect on work efficiency. The Wenatchee Laboratory is ideally suited to conduct field investigations of this type in conjunction with field-exposure studies for a wide variety of pesticides. This project is a continuing study.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER I.D. 31-21AFM

SIGNATURE OF PRINCIPAL INVESTIGATOR Homer Wolfe

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Current Funding Period 7/1/72 - 6/30/73

SI-SIE-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Metabolism of Carbamate Insecticides

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dorough, H. W. (PI)	Dept. of Entomology, University of Kentucky
Cardona, R. A.	College of Agriculture
Kumar, S. S.	
El-Shourbagy, H.	

NAME AND ADDRESS OF INSTITUTION:

University of Kentucky, Lexington, Kentucky

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The chemical and biological fate of carbamate insecticides is being investigated in vertebrate and invertebrate species both in vivo and in vitro. Accountability of the chemical entity from a substrate or whole organism is a major goal. Metabolites are being identified and where quantities permit, toxic properties determined. Emphasis is being placed on thos carbamates currently in use, i.e., carbofuran, carbaryl, etc. In determining the metabolic pathway, emphasis is being placed on the polar metabolites as the majority of apolar metabolites are well known and are measured in standard analytical techniques while polar metabolites escape detection. Efforts are underway to isolate and identify metabolites, establish their biological stability and investigate the mechanisms responsible for their formation.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

X GRANT 802005, ROAP 21AFM, Task 38

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR ______

PROFESSIONAL SCHOOL (medical, graduate, etc.) ______

Sept. 1, 1972 - Aug. 31, 1973 Final Grant Period
FY 72 funding $41,200
FY 73 funding $44,543

SI-SIE-7A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Action of Pesticides and other Drugs on Male Reproduction Organs

Grant 801650
Roap 21AFM
Task 40

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Thomas, J. A. (PI)	Dept. of Pharmacology School of Medicine
Lloyd, J. W.	West Va. Univ. Medical Center
	Morgantown, West Virginia

NAME AND ADDRESS OF INSTITUTION:

West Virginia Univ. Medical Center, Morgantown, W. Va.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Large doses of pesticides (DDT, Dieldrin, or 2,4,5-T) interfere with male sex harmone activity. Daily oral administration of DDT for 10 days (12.5 mg/kg and up) cause a decrease in the ability of the prostate gland to assimilate testasterone and reduces testosterone metabolism. The action of dieldrin is similiar to DDT on the male accessory sex organ, while 2,4,5-T is capable of inhibiting testosterone assimilation but is not as deleterious to the reproductive organs as the other compounds. Doses of 2,4,5-T administered for 40 days at levels up to 25 mg/kg/day failed to elicit changes in the accessory organ weigts or gonadal weights. Further studies will examine and attempt to relate changes in accessory organ metabolism to biochemical functions in the body (Viz. androgen hydroxylase activity and cyclic AMP formation). Attempts will be made to determine how pesticides alter sex accessory gland metabolism.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER ID 21AFM Task 40

SIGNATURE OF PRINCIPAL INVESTIGATOR __________

PROFESSIONAL SCHOOL (medical, graduate, etc.) __________

Sept 1 1972 - Aug. 31, 1973 Final Grant Period

FY 72 funding, $16,100
FY 73 funding, $16,124

SI-SIE-78 A; REV. 8-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY:

TITLE OF PROJECT: Grant 800718

Relationshio of Pesticide Properties to Adsorption

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Ward, TE

NAME AND ADDRESS OF INSTITUTION:

N. C. State University Raleigh, N. C.

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Project Transfered to Ecological Effects Branch
Program Element 1E1077 by memo of Bridbord 8/2/72

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER I.D. 21AFM 1E1077

SIGNATURE OF PRINCIPAL INVESTIGATOR ________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________________

Previously listed as Task 44 on PE 21AFM 1E1078.

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SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Relationship of Pesticides in Soil Water & Plants

Grant 800770
Roap 21AFM
Task 42

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Guyer, G. E. Dept. of Entomology

NAME AND ADDRESS OF INSTITUTION:

Michigan State University East Lansing, Michigan

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Project transfered to Ecological Effects Branch
Program Element 1E10ff by
Memo of Bridbord 8/2/72

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER I.D. 21AFM 1E1077

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________________

FY 72 funding - $98,300 Final period - 9/30/72
Previously listed as Task 44 on PE 21AFM 1E1078

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SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

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PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Chemistry and Mode of Action of Pesticides

Grant 801837
ROAP 21AFM
TASK 46

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Fukufo, T.R. (PI)
Georghiou, G.P.
March, R.B.
Miller, T.A.
Fahmg, M.A.H.

Collins, C.J.
Printy, G.E.
Hawley, M.K.
Gill, P.R.

Dept. of Entomology
College of Biological
and Agricultural
Sciences
Univ. of California

NAME AND ADDRESS OF INSTITUTION:

University of California Riverside, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study includes several phases of investigation into the chemical structure, chemical reactivity and insecticidal properties to define optimum biological activity, toxicity to mammals and chemical structure of selected insecticidal groups. Chemical and biological studies are being performed to define the mode of action of selected organophosphorus esters in an effort to elucidate their selective toxicity to certain insects and lack of mammalian toxicity. Studies on the relationship of insect tolerance to some insecticides are being investigated to define the genetic mechanism of resistance. Chemical and instrumental methods of analysis are being pursued as an aid in studying degradation products of organophosphates, penetration studies metabolism and biological effects of insecticides on insects and mammals.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

__ GRANT

__ INTERAGENCY AGREEMENT

__ OTHER ID 21 AFM
TASK 46

SIGNATURE OF
PRINCIPAL INVESTIGATOR ______________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ______________________

1/1/72 - 12/31/73

Grant continuation-final year FY 74.

FY 72 funding - $43,407
FY 73 funding (APPROX. $45,000).

SI-SIE-78A; REV. 6-64

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Biological Hazards of Phtotransformed Pesticides

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Tanabe, M. (P.I.) Bramhall, R.	Life Sciences Division Stanford Research Institute Menlo Park, California

NAME AND ADDRESS OF INSTITUTION:
Stanford Research Institute, Menlo Park, California

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Recent evidence indicates that members of the main classes of insecticides (chlorinated hydrocarbons, organophosphates and carbamates) are subject to phototransformation and that the products, in at least one case, photo dieldrin, are more toxic than the parent. This project is investigating the posible photochemical pathways of transformation of organophosphorus insecticides, to isolate and characterize the photoproducts and to relate them to field conditions. The investigation will also include chlorinated hydrocarbons not previously investigated for phototransformation. The products will be evaluated for their toxicity to mice, alone and in combination with the respective parent compound in order to detect possible synergistic or antagonistic interactions. Products thus far examined include aldrin, dieldrin, heptachlor and malathion.

METHOD OF SUPPORT (CHECK ONE)

__ INTRAMURAL

__ CONTRACT

_X GRANT #801841, ROAP 21AFM, Task #45

__ INTERAGENCY AGREEMENT

__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

March 1, 1972 - February 28, 1973 Final Grant Period - March 1, 73,- February 28, 1974

FY 72 funding $29,157 - (additional $5,000 to be offered)
FY 73 - Approximately $40,000

TWINBROOK RESEARCH LABORATORY

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: U.S. Environmental Protection Agency, Office of Research & Monitoring

TITLE OF PROJECT: Behavioral Effects of Low Intensity UHF Radiation.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Susan F. Korbel

NAME AND ADDRESS OF INSTITUTION:
University of Arkansas
Fayetteville, Arkansas 72701
3rd Congressional District

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

EPA is charged with establishing standards for population exposure to man-made electromagnetic radiation. One of the principal EM sources in the environment is UHF frequencies used for communication. Subtle behavioral and physiologic responses are a possible effect of these exposures. A series of four experiments will be carried out. Three will be designed to investigate the frequency parameters while the fourth will study a developmental parameter. Male albino rats will be exposed to UHF radiation in the range of 1 mw/cm^2 except while behavioral tests are being made. Measures of avoidance learning will be made in a jumping apparatus. Conditioned stimuli will be used in analyzing activity data.

The developmental parameter experiment will be designed to determine if differential behavior changes occur as a result of UHF radiation during different pre- and post-natal developmental stages.

ETHOD OF SUPPORT (CHECK ONE)

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_INTERAGENCY AGREEMENT

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SIGNATURE OF PRINCIPAL INVESTIGATOR ________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ________

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: U.S. Environmental Protection Agency, Office of Research & Monitoring

TITLE OF PROJECT:

Human Studies of Nonionizing Radiation by Epidemiologic Methods

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Peter B. Peacock

NAME AND ADDRESS OF INSTITUTION: University of Alabama Medical Center, Dept. of Public Health and Epidemiology, 1919 7th Ave, South, Birmingham, Alabama

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

EPA is charged with establishing standards for exposure to electromagnetic radiation which will assure the health of the general population. This project is an evaluation of the possible relationship between parental exposure to X and S band radar, at an estimated exposure range of 10 - 100 $\mu W/cm^2$, and an increase of congenital abnormalities occurring in their offspring. The study is planned in 3 phases:

1. A determination whether the reported high rates of congenital anomalies at Fort Rucker, Alabama is an artifact. If not, ...
2. Using multiple regression, analyze relationships from existing health and occupational records between the incidence of congenital anomalies and variables with potential as causal factors - especially those associated with microwave radiation. If the high incidence rates are still not clear, ...
3. Additional data will be obtained by personal interview and the same type of regression model will be used for analysis including the data from records as well.

METHOD OF SUPPORT (CHECK ONE)

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SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

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NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY: U.S. Environmental Protection Agency, Office of Research & Monitoring

TITLE OF PROJECT: Effects of Electromagnetic Fields on Some Genetic Phenomena in Drosophila

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Gerald Braver and Leon W. Zelby

NAME AND ADDRESS OF INSTITUTION:

University of Oklahoma
Norman, Oklahoma 73069

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Increased human exposure to electromagnetic radiation resulting from expanded use of EM sources in communication has stimulated concern about the possible associated biological effects. The biological effects accompanying high energy radiation and those effects associated with low energy heating have received extensive investigation. However, much less is known about the biological effects of non-thermal, low energy EM fields. In addition, the genetic effects of exposure to environmental contaminants is a principle area of concern. In an attempt to examine some of the genetic effects associated with this EM frequency range, testing of the nonthermal influence of non-ionizing electric and magnetic fields and of microwave radiation on several genetic phenomena in Drosophila melanogaster has been proposed. The genetic phenomena under consideration will include mutation, meiotic exchange of non-disjunction of chromosomes.

The study will utilize the standard Basc (Muller-5) test for sex-linked recessive lethal mutation. Wild-type male flies will be treated for periods ranging up to 2 days (depending on the type of exposure and the results obtained as the experiments progress) and then mated with Basc females. The males would be mated to fresh Basc females every 5 days over a period of at least 20 days to obtain successive broods. This would permit determination of the sensitivity of cells in different stages of development. If positive results are obtained, a more accurate determination of the sensitivity of cells ranging from spermatogonia to mature sperm would be attempted by brooding every day. This procedure also permits detection of sex-linked recessive visible mutations in the second generation and of dominant visible mutations in the first generation. Mutation rates from treated animals would be compared to those from untreated controls.

METHOD OF SUPPORT (CHECK ONE)

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SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: U.S. Environmental Protection Agency, Office of Research & Monitoring

TITLE OF PROJECT: Physiological and Behavioral Effects of Nonionizing Radiation

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Vacancy

NAME AND ADDRESS OF INSTITUTION:

EPA, National Environmental Research Center
Research Triangle Park, NC 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Microwave radiation is rapidly increasing as a means of communication. Microwave transmitters are characteristically sited in high population denisty areas. Concern exists for the possible behavioral and physiological effects of this type of radiation on the living organism.

Laboratory animals will be chronically exposed to 2450 MHz radiation at levels up to 200 mW/cm^2 for protracted periods of time. Neurophysiologic and behavioral assessment of the consequences of the stress will be determined. These will include signal analyses of pertinent physiological variables such as blood pressure, heart rate, and EEG's; both ongoing and stimulated, and statistical analysis of leaning acquisition curves. Other performance parameters and neurotransmitter assays for norepinephrine and acetylcholine esterase will complement the final results.

ETHOD OF SUPPORT (CHECK ONE)

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SIGNATURE OF PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL (medical, graduate, etc.) ____________________

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PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Radiation Effects on Preimplantation Embryos in Vitro (21AMA-12)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Alison P. Casarett, Associate Professor of Radiation Biology

NAME AND ADDRESS OF INSTITUTION: Cornell University
Ithaca, New York

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes. One of the areas of prime importance in the radiation field is the effects of low-level environmental radionuclides on the embryo. It has been shown that the zygote is the most radiosensitive stage of mammalian development to killing. Using recently developed techniques pre-emplantation embryos can be sustained in Vitro to the blastocyst stage. Thus, pre-implantation abnormalities arising from low-level exposure to tritium ^{90}Sr can be directly observed and the dose-effect correlations with subsequent pre and post implantation development may be assessed qualitatively and quantitatively.

To date it has been found that chronic doses as low as 5 - 10 rads from tritium (in Vitro and in Vivo) and ^{90}Sr (in Vitro) will reduce the percentage of cells which develop to the blastocyst stage in mice. Chronic parental exposure of mice to 10, 50 or 100 μCi/ml of HTO resulted in sterility of both males and females by the F_2 generation at 50 μCi/ml (15 rads/day) and a marked decrease in fertility of females in the F_2 at 10 μCi/ml (3 rads/day). First generation makes exposed to 10 or 25 μCi/ml had a marked decrease in fertilizing capacity of sperm and in the pre-implantation development of embryos. Similar results in males were obtained after I. P. injection of 28 μCi of ^{90}Sr.

Proposed work will include definition of the type and frequencies of morphologic abnormalities occuring in pre-inplantation stages and extension of the tritium and ^{90}Sr exposures to lower levels and through 6 generations.

METHOD OF SUPPORT (CHECK ONE)

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SIGNATURE OF
PRINCIPAL INVESTIGATOR ______________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ______________________

SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SUPPORTING AGENCY:

TITLE OF PROJECT: Tumorigenic and Life Span Shortening Effects of Continuous Intra-uterine Exposure to Tritiated Water (21AMA-09)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project

Daniel F. Cahill, Chief, Radionuclide Toxicology Branch, Experimental Biology Laboratory
John W. Laskey, Research Biologist, Radionuclide Toxicology Branch, Exp. Biol. Lab.
Jerrold M. Ward, Veterinary Pathologist, NCI, NIH
James V. Wright, Veterinary Pathologist, Radionuclide Toxicology Branch, Exp. Biol. Lab.
Peter H. Freeman, Biologist, Radionuclide Toxicology Branch, Exp. Biol. Lab.

NAME AND ADDRESS OF INSTITUTION:
Environmental Protection Agency
National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK — (200 words or less.) — In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Some major long-term somatic consequences of irradiation are the induction of tumors and non-specific life span shortening. There are some suggestions that the fetus may be particularly sensitive to radiation-induced cancers. In order to explore the effects as a result of low-level exposures to a prime environmental contaminant, tritiated water, Sprague-Dawley rats have been exposed throughout gestation only to 1, 10, 50 or 100 µCi of HTO per ml of (maternal) body water. These activities provide total doses of 6.6, 66, 330 or 660 rads of total body exposure over the gestation period. Since the dams were exposed to the same total doses they have also been retained for observation. The results will not be complete for another year. However, to date the tumor incidence to date has been as follows:

Tumor Incidence

	Mothers		Offspring			
			Males		Females	
	Total Incidence	Type*	Total Incidence	Type*	Total Incidence	Type*
Control	2/41	1M, 1P	1/120	1M	5/114	5M
1 µCi/ml	6/34	3M, 3P	1/97	1P	6/71	3M, 2P 1U
10 µCi/ml	5/32	4M, 1MP	1/98	1P	3/101	1M, 2P
50 µCi/ml	11/29	9M, 2MP	0/99	--	2/76	1P, 1O
100 µCi/ml	23/48	20M, 2P, 1MP	1/104	1M	3/96	2M, 1O

*M=mammary P=pituitary MP=mammary & pituitary
O=ovarian U=uterine

Considering that the mothers were exposed to radiation to the same extent as the offspring and are only 4 months (continued below)

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PROFESSIONAL SCHOOL (medical, graduate, etc.)

older, the data at this time suggest that the pregnant females may be more susceptible to radiation-induced tumors than similarly insulated fetuses.
Begun 8/70; expected completion 8/73.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Effects on the F_2 Generation of Lifetime Parental Exposure to Tritiated Water (21AMA-10)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESS[illegible]

John W. Laskey, Research Biologist, Radionuclide Toxicology Branch, Experimental Biol. Lab.
Jeanie L. Parrish, Biologist, Radionuclide Toxicology Branch, Experimental Biol. Lab.
Daniel F. Cahill, Chief, Radionuclide Toxicology Branch, Experimental Biol. Lab.

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency
National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

One of the governing factors in setting population radiation standards is the genetic consequences of the exposure. Tritiated water is an environmental contaminant and produces total body radiation exposure. In order to make a test of the validity of the ICRP recommendations for continuous exposure of individuals in the general population to tritiated water, Sprague-Dawley rats have been continuously exposed from conception thru the delivery of an F_2 generation to body water levels of HTO of 0.01, 1 and 10 μCi/ml. These activities provide 3 millirads - 3 rads/day of total body irradiation and are 2 - 2000 times the ICRP recommendations. To date the results are:

Continuously Exposed F_1 Males
Organ Weight as % Body Weight

	Heart	Lung	Liver	Kidney	Testes
Control	0.331	0.58	3.39	0.78	0.92
0.01	0.331	0.57	3.34	0.72	1.06
0.10	0.31	0.45	3.06	0.67*	0.96
1.00	0.34	0.59	3.15	0.69	1.00
10.0	0.31	0.54	3.13	0.67*	0.72*

Begun 10/71; to be completed 12/72.

F_2 Generation Parameters

	Ave. Litter Size	% Dams with Resorptions
Control	10.3	8.0
0.01	9.8	16.7
0.10	9.2	33.3
1.00	10.5	50.0
10.0	8.0	100.0

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SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

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SMITHSONIAN INSTITUTION

NOT FOR [illegible]
PUBLICATION REFERENCE

SUPPORTING AGENCY:

TITLE OF PROJECT:

Effects on the Developing Nervous System of Continuous Intra-uterine Exposure to Tritiated Water (21AMA-11)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL [illegible]

Steven J. Bursian, Biologist, Neurophysiology Branch, Experimental Biology Laboratory
Daniel F. Cahill, Chief, Radionuclide Toxicology Branch, Experimental Biology Laboratory
Lawrence N. Parker, Resident, University of California, San Diego, Medical Center

NAME AND ADDRESS OF INSTITUTION:

Environmental Protection Agency
National Environmental Research Center
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work [illegible] government and private agencies supporting research, and are forwarded to investigators who request such information. [illegible] for these purposes.

The developing CNS of the fetus is considered to be the most radio-sensitive mammalian system and may be one of the limiting factors in setting population radiation exposure standards. Since tritiated water is a prime environmental contaminant, we are investigating the effects of continuous low-level intra-uterine irradiation with tritium on the postnatal CNS neurochemical levels of Sprague-Dawley rats. Previous work has shown that 1μCi HTO/ml body water (0.3 rads/day) thru gestation produced no gross pathologic effects but 10 - 100μCi/ml reduced relative and absolute brain weights. The question is do these observations have any neurological significance. Norepinephrine and acetylcholinesterase levels in the brain are considered to be indices of the sympathetic and parasympathetic enervation of the brain. The results to date are as follows:

Norepinephrine (ng/g) and Acetylcholinesterase (mM hydrolzed/hour/g)
Activities of Postnatal Rat Brains

Dose Level	2 days		21 days		48 days	
	NE	AChE	NE	AChE	NE	AChE
Controls	67±4	--	202±15	0.246	511±14	0.333
1μCi/ml	69±5	--	201±9	0.258	523±11	0.324
10μCi/ml	99±7*	--	234±24	0.260	603±19*	0.341
100μCi/ml	82±6	--	372±36*	0.273	794±30*	0.344

*$p < .05$

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PROFESSIONAL SCHOOL (medical, [illegible], etc

The indication is that 1μCi/ml of HTO thru pregnancy has no effect on the neurotransmitter levels in the brain and although the absolute and relative brain size of 100μCi/ml animals is reduced at all ages the result is higher than normal production of NE which may indicate an impaired release mechanism.

Begun 6/71; to be completed 12/72.

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SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Absorption, Excretion and Distribution of Orrally Administered PuO_2 in Cats of Various Ages (21AMB-03)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

a) Dr. James F. Wright, Project Director
b) Dr. Neal S. Nelson
c) Dr. Ezra Berman
d) Dr. Charles G. Liddle

NAME AND ADDRESS OF INSTITUTION:

Toxicological Studies Section, EPA
c/o Hazleton Labs, 9200 Leesburg Pike
Vienna, Virginia 22180

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is expected that one of the main sources of power in the future will be the fast breeder reactor and, as a result, the amount of Plutonium in existence will increase rapidly. In spite of the extreme care taken in the development of nuclear facilities to date Plutonium has alreadyto some degree, contaminated the environment and the potential for such contamination can only increase with this expanded use of nuclear energy.

There are many unanswered questions concerning the metabolism of Plutonium particularly in terms of possible compounds created from releases of Plutonium to the environment, and the biological behavior of these compounds.

This program is part of an overall program which is designed to provide additional information as to the chemical forms of Plutonium in the environment as a result of interaction in soils, plants and animals and to determine the metabolism of these compounds compared with the forms commonly examined as potential release compounds. The purpose of this project is to determine the absorption, excretion and distribution of Plutonium oxide in cats of various ages to provide a foundation for additional studies utilizing environmental forms.

The project will begin in fiscal year 1973 and will be completed by June 1975.

METHOD OF SUPPORT (CHECK ONE)

INTRAMURAL

CONTRACT

GRANT

INTERAGENCY AGREEMENT

OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR

PROFESSIONAL SCHOOL (medical, graduate, etc.)

a) The dates of the current project authorization are July 1972 to June 1973

b) The first year effort is $200,000.

SI-SIE-7HA; REV. 6-64 1cp.

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Spatial Distribution of Alpha Dose in Bone (21AMB-04)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

a) Bernard S. Pasternack, Ph.D.
Associate Professor, Director Biostatistics Lab

b) Naomi H. Harley, Ph.D.
Associate Research Scientist, Biostatistics Lab

NAME AND ADDRESS OF INSTITUTION:
New York University Medical Center
Institute of Environmental Medicine
550 First Avenue, New York, N.Y. 10016

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Substantial evidence exists that osteogenic sarcomas can arise from alpha emitting radionuclides deposited in the skeleton. Although this has been known for about 45 years there has not been sufficient basic data to perform the detailed calculations of physical bone dosimetry. The dosimetry is complex and four factors must be established if realistic spatial dose distributions in bone are to be determined. These factors are: 1) the location of the alpha emitter in bone, i.e., uniformly distributed or distributed only on bone surfaces; 2) the dimensions of bone microstructure; 3) the locations of cells which are critical targets for biological damage; 4) the exact expressions for the energy loss of alpha emitters traversing mineral bone and bone marrow.

The first two factors are reasonably well known for man and a few animal species. The cells which are critical targets are not absolutely known, but the tumors appear to arise in a thin layer of cells near endosteal surfaces. The fourth factor has recently been determined and experimentally verified for calculation of energy loss in soft tissue for several alpha emitters. It is now possible to calculate the energy loss in other tissues from this data and to evaluate the energy loss from alpha emitters deposited in bone.

The spatial dose distribution for alpha emitters will be calculated for critical sites in man, and for the animal species where bone microdimensions are available, using a high speed computer. Since the tumor response to various alpha emitters is known for a few animal species, a comparison of the known response with the dose distribution will provide an estimate of the tumorogenic dose. This in turn can be compared with data for man to extend the estimates to areas where there is still insufficient data on man.

METHOD OF SUPPORT (CHECK ONE)

INTRAMURAL

CONTRACT

GRANT

INTERAGENCY AGREEMENT

OTHER

SIGNATURE OF
PRINCIPAL INVESTIGATOR ______________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ______________________

a) The project will begin in fiscal year 1973 and will be completed in fiscal year 1974.

b) The first year effort is $25,000.

SI-SIE-76A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Studies of the Mechanism of Preferential Skeletal Uptake of Heavier Alkaline Earths Element /Ba, Ra/ in Rabbits (~~21 AMB~~ 89S2 - unfunded)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the pro

a) Dr. Julian Liniecki, Chief
Department of Radiological Protection
b)Dr. Wiesława Karniewicz, Senior Staff member, Department of Radiological Protection
c) Tomislaw Dominski, Senior Staff member, Department of Radiological Protection
d) Danuta Witkowska, Senior Assistant, Dept. of Radiological Protection

NAME AND ADDRESS OF INSTITUTION:
Laboratory of Internal Contamination and Radioactive Aeros
Institute of Occupational Medicine
Lodz, Teresy 8, P.O. Box 199 Poland

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Studies of bone mineral metabolism of alkaline earth elements have not yet explained to what extent preference in blood-bone transfer of elements other than calcium is reflected in the various processes (new bone formation, rapid ionic exchange, slow diffusion and ionic exchange) responsible for total metabolic balance as observed in kinetic studies. Recent similarities found in models for alkaline earths and other bone-seekers may allow an alkaline earth elements model to be used with other elements such as thorium, plutonium, sodium, etc.

An understanding of processes underlying the metabolism of bone-seeking elements and the quantitative description of these processes is a prime prerequisite for creation of a comprehensive skeletal model of these elements. Such a model could be used for prediction of metabolic concentration of elements and for dosimetric purposes in cases of internal contamination with radioisotopes of the elements. The dosimetry model is important for better understanding and quantitative formulation of dose-effect relationships for late effects of radiation.

This project is aimed at quantitative study in microscopic scale of one of the elements of the model, the process of the blood-bone transfer of alkaline earths. Among the parameters to be considered are distribution patterns of calcium and barium at different times after intravenous injection, the elementary processes transfering alkaline earth tracers from blood to bone and which is responsible for preferential uptake of heavy alkaline earth elements and inter-species comparisons.

The project will begin in fiscal year 1972 and will be completed in fiscal year 1976.

SIGNATURE OF
PRINCIPAL INVESTIGATOR ____________________

PROFESSIONAL SCHOOL
(medical, graduate, etc.) ____________________

a) The dates of the current project authorization are May 1972 to May 1976

b) The first year effort is $46,348; total effort is $111,980.

EASTERN ENVIRONMENTAL RADIATION LABORATORY

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SI-SIE-70A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

S.I.E. NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:
Establish Operational Surveillance Networks for Food & Vegetation Samples

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Robert Lieberman, Chief, Physical Sciences Research Branch
Sam Cummings, Supervisor, Analytical Systems Development Section

NAME AND ADDRESS OF INSTITUTION:
EPA, Eastern Environmental Radiation Laboratory
P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

An operational surveillance network will be designed and criteria will be established for the collection of samples to include food and vegetation.

The networks will be established on the basis for determining various possible environmental pollutants and their effect on population groups.

This project was started 7/1/72 and is to be completed 6/30/74.

ETHOD OF SUPPORT (CHECK ONE)
X INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Robert Lieberman

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 7/1/72 - 6/30/73
(B) $34.7 thousand

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SI-S.E-78A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.	
AGENCY NO.	

SUPPORTING AGENCY:

TITLE OF PROJECT:

Radiochemical Methodology Evaluation for Aqueous Samples

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Robert Lieberman, Chief, Physical Sciences Research Branch
Howard Kelley, Supervisor, Electronic Instrumentation Section
Sam Cummings, Supervisor, Analytical Systems Development
Tom Plant, Physicist
Bernd Kahn, Chief, Radiochemistry & Nuclear Engineering Laboratory
Herman Krieger, Supervisory Chemist

NAME AND ADDRESS OF INSTITUTION:

EPA, Eastern Environmental Radiation Laboratory
P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Methodology evaluated and developed for the determination of individual radionuclides in aqueous effluent samples associated with the nuclear power industry.

Radionuclides investigated include Ag, Ba, C, Cd, Ce, Co, Cr, Cs, Cu, Fe, I, La, Mn, Mo, Nb, Ni, Np, P, Ru, S, Sb, Sn, Ta, W, Y, Zn and Zr.

Manual will be issued in FY 73.

This project was completed 6/30/72.

THOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Robert Lieberman

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) Completed 6/30/72
(B) None

SI-SIE-76A; REV. 6-64

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Establish ^{3}H and ^{14}C Methodology for Biota Samples

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Robert Lieberman, Chief, Physical Sciences Research Branch
Sam Cummings, Supervisor, Analytical Systems Development
Howard Kelley, Supervisor, Electronic Instrumentation Section
Leslie Bankert, Radiochemist

NAME AND ADDRESS OF INSTITUTION:

EPA, Eastern Environmental Radiation Laboratory
P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Development will be initiated on tritium and carbon-14 methodology for sample types such as food, vegetation and biota component. These samples will originate as part of environmental surveillance programs.

This project was started 7/1/72 and is to be completed 6/30/74.

ETHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Robert Lieberman

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 7/1/72 - 6/30/73
(B) $15.3 thousand

SI-SIE-7SA; REV. 5-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Radiochemical Methodology Development for Surveillance Program

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Robert Lieberman, Chief, Physical Sciences Research Branch
Howard Kelley, Supervisor, Electronic Instrumentation Section
Sam Cummings, Supervisor, Analytical Systems Development
Leslie Bankert, Radiochemist

NAME AND ADDRESS OF INSTITUTION:

EPA, Eastern Environmental Radiation Laboratory
P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Radiochemical and instrumentation development will be expanded to include ^{55}Fe, ^{129}I, ^{131}I, ^{89}Sr and ^{90}Sr analyses for surveillance purposes. Sample types will include food, vegetation and other biota.

This project was started 7/1/72 and is to be completed 6/30/75.

ETHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Robert Lieberman

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 7/1/72 - 6/30/73
(B) $16.7 thousand

SI-SIE-76A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

S.I.E. NO.

AGENCY NO.

SUPPORTING AGENCY:

TITLE OF PROJECT:

Radiochemical Methodology Evaluation for Food & Vegetation Samples

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Robert Lieberman, Chief, Physical Sciences Research Branch
Sam Cummings, Supervisor, Analytical Systems Development Section
Howard Kelley, Supervisor, Electronic Instrumentation Section
Bernd Kahn, Chief, Radiochemistry & Nuclear Engineering Laboratory

NAME AND ADDRESS OF INSTITUTION:

EPA, Eastern Environmental Radiation Laboratory
P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Radiachemical and instrumentation methodology will be investigated for individual radionuclides in food and vegetation samples. Efforts will be coordinated between the above laboratory and the Radiochemistry & Nuclear Engineering Laboratory, Cincinnati,

This project was started 7/1/72 and is to be completed 6/30/73.

ETHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
_ CONTRACT
_ GRANT
_ INTERAGENCY AGREEMENT
_ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Robert Lieberman

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 7/1/72 - 6/30/73
(B) $33.3 thousand

SI-SIE-76A; REV. 6-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE.
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Genetic Effects of Microwave Radiation on Chinese Hamsters

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

James M. Everts, Chief, Radiation Bio-Effects Research Branch, Eastern Environmental Radiation Laboratory
Blair F. Rehnberg, Supervisor, Animal Care Section, EERL, EPA
Mayme C. Colvin, Supervisor, Cytogenetics Section, EERL, EPA

NAME AND ADDRESS OF INSTITUTION:

Eastern Environmental Radiation Laboratory, P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Sexually mature male and female Chinese hamsters are irradiated with microwave radiation (2450 MHz) at a power density of 200 mW/cm^2 for two minutes. The animals are then bred and the litters observed for variation from the norm of our colony. Blood leukocyte cultures are prepared from the offspring reaching weaning age and the cells scored for chromosome anomalies.

This study is designed to give an indication of the presence or absence of gross genetic effects elicited by microwave radiation.

This project began 8/1/71 and is to be completed 1/1/73,

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR James M Everts

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 8/1/71 - 3/1/73
(B) $42.2 thousand

SI-SIE-79A; REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Cytogenetic Effects of Microwave Radiation on Tissue Culture

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

James M. Everts, Chief, Radiation Bio-Effects Research Branch, Eastern Environmental Radiation Laboratory
Mayme C. Colvin, Supervisor, Cytogenetics Section, EERL, EPA

NAME AND ADDRESS OF INSTITUTION:

Eastern Environmental Radiation Laboratory, P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Cultured cells will be irradiated with 2450 MHz microwave radiation for varying time intervals and varying power densities. Power density will range from 200 mW/cm^2 to 15 mW/cm^2. Chromosome analysis will follow the irradiation procedure at appropriate time intervals.

This data will provide information regarding variations in percentage of chromosome aberration associated with time and power density variations.

This project is to begin 9/1/72 and to be completed by 1/1/74.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR James M Everts

PROFESSIONAL SCHOOL (medical, grad. sch., etc.)

(A) 7/1/72 - 3/1/73
(B) $29.2 thousand

SI-SIE-78A, REV. 6-64

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

S.I.E. NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

Cytogenetic Effects of Microwave Radiation on Chinese Hamsters (variable power density)

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

James M. Everts, Chief, Radiation Bio-Effects Research Branch, Eastern Environmental Radiation Laboratory
Mayme C. Colvin, Supervisor, Cytogenetics Section, EERL, EPA

NAME AND ADDRESS OF INSTITUTION:

Eastern Environmental Radiation Laboratory, P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Chinese hamsters will be irradiated with 2450 MHz microwave radiation at accurately specifiable free field power densities for a predetermined time interval. The incident power density will vary from 200 mW/cm^2 to 15 mW/cm^2. Animals will be sacrificed and appropriate tissues cultured for chromosome analysis.

This data will provide information regarding variations in percentage of chromosome aberrations associated with power density.

This project was to begin 6/1/72 and to be completed by 6/30/73.

MODE OF SUPPORT (CHECK ONE)
X INTRAMURAL
CONTRACT
GRANT
INTERAGENCY AGREEMENT
OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR James M Everts

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 6/1/72 through 6/30/73
(B) $43.8 thousand

SI-SIE-78A; REV. 5-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

S.I.E. NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

In Vivo equilibrium distribution of ^{85}Kr in tissues of guinea pigs and Chinese hamsters

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

William P. Kirk

NAME AND ADDRESS OF INSTITUTION:

Eastern Environmental Radiation Laboratory, P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Equilibrium tissue to air partition coefficients are being determined for ^{85}Kr for major organs and tissues of guinea pigs and hamsters to relate individual organ concentrations and doses to ^{85}Kr concentration in the air breathed by the animal.

The procedure followed is: (1) have animal breathe a known concentration of ^{85}Kr until tissues are fully saturated[1] (4-6 hours); (2) inject ^{131}I labeled serum albumin into the heart. Allow 15 minutes for circulatory equilibrium; (3) take a 1-2 cc blood sample by cardiac puncture and seal in a preweighed counting vial; (4) anesthetize the animal with Nembutal IP, remove from ^{85}Kr atmosphere and sacrifice by immersion in liquid nitrogen; (5) partially thaw, dissect, and seal carefully trimmed tissues in pre-weighed counting vials; (6) weigh samples; (7) determine ^{131}I and ^{85}Kr content with NaI well counter and an MCA; (7) determine, for blood, ^{131}I CPM/gram and ^{85}Kr CPM/ ^{131}I CPM; (8) for each other sample determine contained blood weight, ^{85}Kr content in blood, parenchyma weight, and ^{85}Kr in parenchyma; (9) determine specific activity of ^{85}Kr in parenchyma and relate to ^{85}Kr in air concentration

The project is part of a comprehensive investigation of the physiological behavior and radiation effects of ^{85}Kr. Guinea pig studies started in May 1972. Data for both species are expected to be complete in December 1973.

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[1] Animal continues to breathe ^{85}Kr until sacrificed in step 4.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Blair F. Rehnberg for William P. Kirk

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 7/1/72 - 12/31/72
(B) $8.7 thousand

[illegible]

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT:

In Vivo Whole Body Kinetic Behavior of ^{85}Kr

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

William P. Kirk

NAME AND ADDRESS OF INSTITUTION:

Eastern Environmental Radiation Laboratory, P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Whole body partition coefficients and kinetic parameters (number, size of "compartments"; rates of saturation, desaturation) for ^{85}Kr are being studied with guinea pigs, Chinese hamsters, rats and dogs. Animals breathe an ^{85}Kr-air mixture of known concentration until body tissues are fully saturated with ^{85}Kr and then breathe room air until desaturated. Whole body ^{85}Kr content is determined frequently during saturation and/or desaturation, plotted vs. time, and resolved into exponential components with graphical and computer techniques. Body ^{85}Kr content may be determined by several methods including: (1) whole body counting in a large NaI well crystal; (2) counting the animal with a large collimated NaI detector and comparing the count to phantom calibrations; (3) assaying disappearance of activity from the closed spirometer system from which the animal is breathing or (4) collecting and assaying exhaled ^{85}Kr.

The project is part of a comprehensive investigation of the physiological behavior and radiation effects of ^{85}Kr and will be done in segments interrelated to other work. Preliminary data with guinea pigs collected in 1971 is being prepared for publication. Studies with hamsters, rats, dogs and additional guinea pigs are scheduled through 1975.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
___ CONTRACT
___ GRANT
___ INTERAGENCY AGREEMENT
___ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR William P. Kirk

PROFESSIONAL SCHOOL
(medical, graduate, etc.)

(A) 7/1/72 - 6/30/73
(B) $7.5 thousand

SI-SIE-75A; REV. 5-64

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Determination of effects of acute exposure to ^{85}Kr in beta-infinite cloud geometry.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

William P. Kirk
Blair F. Rehnberg

NAME AND ADDRESS OF INSTITUTION:

Eastern Environmental Radiation Laboratory, P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Guinea pigs, Chinese hamsters and rats will be acutely exposed to ^{85}Kr in an essentially beta infinite geometry (tank 18' long x 8' 2" diameter) to determine median lethal exposures and to study hematological and pathological changes associated with such exposure. Cytogenetic effects on Chinese hamsters, for both exposed animals and their offspring will be studied at the median lethal exposure level. The exposure conditions will closely approximate those postulated in current calculations of $(MPC)_a$ by the ICRP, NCRP, etc.

The project began in June 1972. Initial exposures are expected to begin in April 1973. Median lethality data is expected to be complete in December 1974, hematology and pathology data in June 1975 and cytogenetics data in December 1975.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

Blair F. Rehnberg for

SIGNATURE OF PRINCIPAL INVESTIGATOR William P. Kirk

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 7/1/72 - 6/30/73
(B) $21.1 thousand

SI-SIE-7A; REV. 6-54

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

S.I.E. NO.

AGENCY NO.

SUPPORTING AGENCY: Environmental Protection Agency

TITLE OF PROJECT: Effects of acute exposure of guinea pigs to ^{85}Kr via the respiratory tract with the exterior of the body protected

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

William P. Kirk
Blair F. Rehnberg

NAME AND ADDRESS OF INSTITUTION:

Eastern Environmental Radiation Laboratory, P. O. Box 61, Montgomery, Alabama 36101

SUMMARY OF PROPOSED WORK -- (200 words or less.) -- In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Median lethal exposures and associated pathology and hematology are being studied for guinea pigs breathing an ^{85}Kr - air mixture. A special 10-animal closed life support and exposure system is being used which protects the exterior of the body, with the exception of part of the face, from the ^{85}Kr beta radiation while permiting the unanesthetized animals to breathe the test mixture. Groups of animals are being exposed for a fixed time to selected concentrations of ^{85}Kr and then observed for 60 days (including weighing and recording of clinical phenomena as well as incidence and time of deaths) to determine the median lethal exposure for guinea pigs to ^{85}Kr under these conditions. More guinea pigs will be subjected to the median lethal exposure for serial study of hematological and pathological changes and cause(s) of death.

This project is part of a comprehensive investigation of the physiological behavior and radiation effects of ^{85}Kr. Design work and pilot experiments started at the University of Rochester in 1971. Lethality experiments began at EERL in June 1972 and will be complete by March 1973. Pathology/hematology studies will be complete by March 1975.

METHOD OF SUPPORT (CHECK ONE)

X INTRAMURAL
__ CONTRACT
__ GRANT
__ INTERAGENCY AGREEMENT
__ OTHER

SIGNATURE OF PRINCIPAL INVESTIGATOR Blair F. Rehnberg for William P. Kirk

PROFESSIONAL SCHOOL (medical, graduate, etc.)

(A) 7/1/72 - 6/30/73
(B) $19.1 thousand